PAPER TRADE JOURNAL

FEBRUARY 7, 1946

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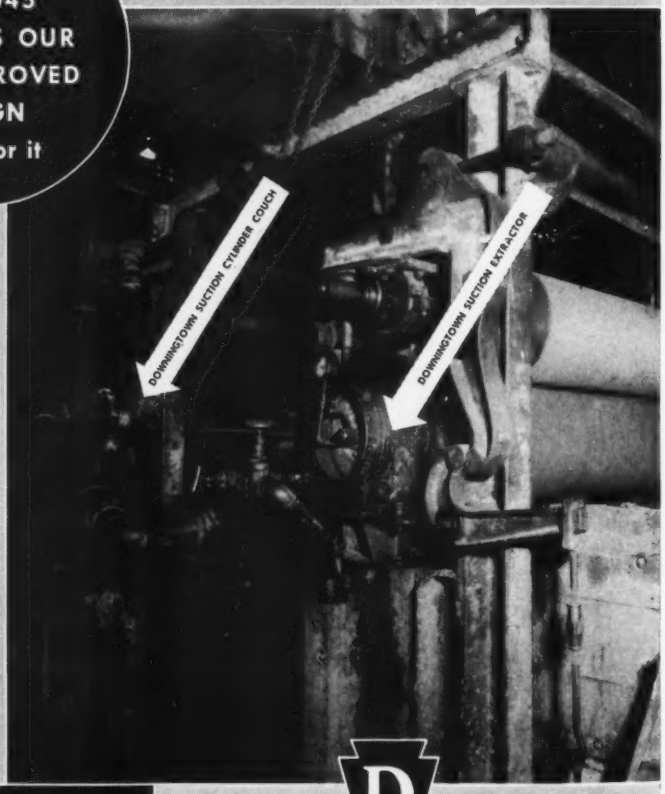

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PAPER TRADE JOURNAL

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GEO. E. LOCKWOOD
President and Treas.

ARTHUR E. GORDON
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HENRY J. BERGER
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STILLMAN TAYLOR
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R. G. MACDONALD
"TAPPI" Editor

F. B. GROSSE
Make-Up Editor

LYNNE M. LAMM
Washington Correspondent

Western Representatives:
H. K. VINTON
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Vol. 122, No. 6

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

February 7, 1946

Employment Up 3 Per Cent in Wisconsin

Industrial Commission Also Reports Weekly Payrolls Rose 5.7% In December With Average Hourly Wage 91.1 Cents—Commends Work Record of Veterans — Mills Aid Acute Housing Shortage.

APPLETON, Wis., February 2, 1946—Employment in Wisconsin's paper and paper products industries showed a 3% increase in December, 1945, compared with the previous month, and weekly pay rolls were up 5.7%, according to a report issued at Madison, Wis., by the Industrial Commission of Wisconsin.

There were 24,100 persons employed in December, 1945, as compared with 23,400 in November, and the weekly payrolls were $1,040,000 and $983,000 respectively. The average hourly wage was 91.1 cents, and weekly pay averaged $43.19 for 47.4 hours.

In the Milwaukee metropolitan area 22 establishments in the paper and allied industries reported 2,442 employes, a gain of 4.7%. December payrolls were up 4.4%, the total being $96,258. Weekly pay averaged $39.42 for 45.5 hours, or 86.7 cents per hour.

Commends Work Record of Veterans

The good employment record being made by hundreds of thousands of World War II veterans already discharged and employed in manufacturing industry will make eventual job-hunting easier for the millions of soldiers and sailors still in service, according to A. C. Gilbert, president of the Gilbert Paper Company, Menasha, Wis.

Mr. Gilbert spoke as a member of the National Association of Manufacturers, which recently completed a survey, indicating that industry has hired three times as many veterans as the law requires, and that the veterans are making good. Mr. Gilbert is a member of the NAM committee on veteran employment.

"My own experience in my company is that military service has considerablye developed our employees for the better," he stated. "And management generally is unanimous in praising the performance veterans are now turning in on the job. Supervisors will attest that veterans are proving better than average in their productive use of working time, job attitude and cooperation."

Stressing industry's concern for the disabled veteran, he said the survey revealed that men with physical impairments are almost invariably making good men when placed on jobs where disabilities are not handicaps. The success of the disabled, he added, is due largely to careful job study to learn what kinds of work men with various disabilities can perform. He cited the case of a one-armed veteran whose record on the job was so good that his foreman asked the employment office for six more men similarly disabled.

Employers should not be unduly predjudiced against veterans discharged as neuropsychiatrics because the term means only that the man was unable to adjust himself to the requirements of military life, Mr. Gilbert said. A neuropsychiatric might be an extremely valuable civilian employe, he added.

"Disabled veterans are proving highly satisfactory industrial employes," he declared. "They have raised no problems in my plant that would cause industry any concern. In fact, the situation has progressed to the point where adjustments of disabled veterans no longer are the subject of exhaustive comment."

Will Aid Housing Shortage

Arthur Bonhen, Chicago, head of the Compleat House, which is building homes for the Twin City Real Estate Company to alleviate the housing shortage in Neenas and Menasha, Wis., last week addressed the Menasha Rotary Club at Hotel Menasha. The real estate firm was set up by Marathon Corporation and Kimberly-Clark Corporation. Between 75 and 125 houses will be built in the two cities. Five already are under roof in Neenah and six in Menasha.

Nekoosa-Edwards Holds Sales Conference

The thirteenth annual sales conference of the Nekoosa-Edwards Paper Company at its home offices at Port Edwards, Wis., was concluded on January 30. The three-day session was directed by A. C. Remley, general sales manager. It was attended by all members of the sales, technical and manufacturing staffs.

Discussion centered on post war problems and their solution, and salesmen were schooled in plans for the year ahead. The conference was opened Monday morning, January 28, by John E. Alexander, president and general manager of the company, and some time was devoted to discussions by the technical and manufacturing staffs on improvements already adopted and still to come. Problems of the salesmen of general interest or peculiar to their individual territories were covered for the benefit of the group as a whole.

Tuesday evening, January 29, was devoted to a cocktail hour at the home of John Alexander, fol-

(Continued on page 24)

Midwest Reports Very Heavy Paper Demand

Current Orders 40% Above Supply With Little Relief In Sight—Greater OPA Cooperation To Speed Post-War Conversion Declared Needed—Salesmen and Professional Group Hold Meetings.

CHICAGO, ILL., February 4, 1946—Those who are close to the picture in the Chicago paper market are not too optimistic about the next eleven months. Recently, clearance came from a number of groups locally who reported that demand was running between 40 and 50% ahead of supply and that there were no factors in sight to lessen this insistent pressure from a trade in general which wanted to get going. It is reported that the employment problem is still very acute, there are shortages in allied trades which have a profound effect on paper manufacture and there are, of course, many manufacturers who feel that OPA has not by any means provided the incentive needed for big production of paper.

Repeatedly, one hears that the recent upward revisions of various maximum price regulations—at least as far as differentials are concerned—have really done nothing to change things except to make it possible for the average concern to come closer to "breaking even." Here and there are added reports of slowness in government reconversion policies, fear of continued controls and other factors not too "happy." On the other hand, the industry locally is certain that it will come through 1946—in fact, the entire war period, much stronger than when it went in—with a country well educated to the importance of paper and with an industry sufficiently on its toes to provide better quality at lower cost to permit expanded usage of one of America's greatest products.

Salesmen Meeting February 11

The usual "round table" discussions continue to feature the regular Monday noon meetings of the Western Division of the Salesmens Association of the Paper Industry . . . These "round tables" are to be broken into, however, on February 11, when the western division has its own version of the Association "annual meeting." On that date the agenda of the annual meeting—to be held February 25 in New York—will be carefully followed, the President's report received and full committee reports given. At this time no nominations for offices have been published and no committee appointments for the ensuing twelve months have been publicized by the western division vice president, "Pat" Patterson of the Flambeau Paper Company.

Hear Hammermill Executive

The Chicago Professional Paper Group held its first meeting of the new year on Monday evening, January 21, in the dining rooms of the Chicago Bar Association. Headed by Harry Weston, president, the group featured a discussion of what's ahead in the paper industry to start the year off right. The speaker was Ellis Frampton, assistant general sales manager of the Hammermill Paper Company who spoke on "New Things Ahead for Paper." According to reports, the speaker presented, in most interesting manner, the results of an everlasting search for improved quality, lower production costs, expanding markets, new uses and higher regard for the industry and its products. He also commented on the helpful results of constant investigation by the paper industry to do a better war time job—all resulting in a bright outlook for the trade.

Fuchs & Lang Co. Add to Sales Staff

With headquarters in Chicago., A. G. Lynn and A. M. Albright are now a part of the western sales staff of Fuchs & Lang Manufacturing Company. Mr. Lynn, with a background of experience in the manufacture of fiber boxes and containers and Mr. Albright, with experience in the printing and lithograph business, will cover Indiana and Michigan respectively for the firm which is a division of the General Printing Ink Corporation.

Plan Packaging Exposition

According to word from Irving J. Stoller, Bradner Smith & Company, and chairman of the convention committee of the Industrial Packaging Engineers Association of America, the Association will hold its industrial packaging show and annual convention at the Hotel Sherman, Chicago, April 24 to 26. R. F. Webber, packaging engineer of the International Harvester Company, is president of the Association which plans to set aside sufficient room for nearly one hundred exhibits which will be augmented by packaging clinics to be held each morning for the three days of the convention. A large representation from the more than four hundred members of the Association is expected to be on hand to participate in the convention proceedings and to view the exhibits being arranged by nationally known firms in this field.

See OPA Price Changes Beneficial

Paper merchant leaders are finding some solace in recent OPA revisions pertaining to various grades of paper. Belief persists that the benefits will be mainly in materially straightening out contorted positions in the various grades. As far as prices are concerned, the OPA changes are expected to do no more than keep in step with the many increases in cost of production if—in truth—they do that well! Dealers and mill representatives here point out that the cost of wood, fabricating materials and labor have "shot skyward" and that the OPA changes will certainly not aid the profit position of the industry. However, the fact remains that the increases in differentials in the lines affected did make the spread far less noticeable, according to reports.

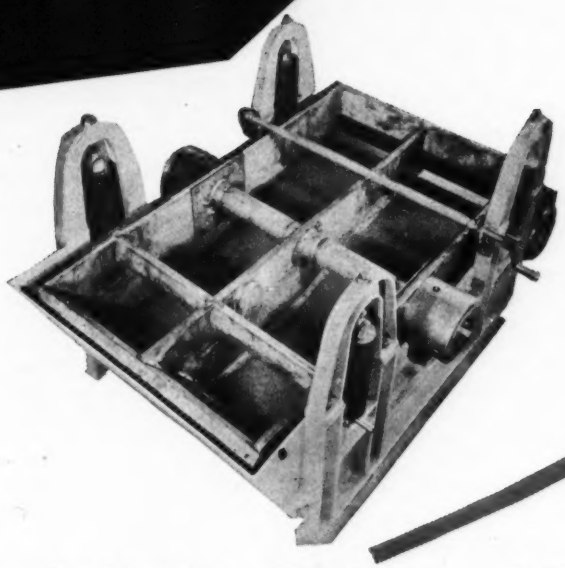
The market, specifically, remains little changed with demand running strong as business tries to prepare for what has been termed a "most uncertain spring". The strikes in various lines are having genuine effect on the products of big paper users which must be taken into account as a factor in mitigating the strain of demand.

Prices at this time represent the firmness of the market—with demand consistently increasing, according to local reports.

Illinois is expecting a special legislative session in May with housing and the soldiers bonus as major problems. At the present time three proposals have

(Continued on page 24)

HERE'S THE WHOLE WORKS



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The JONSSON SCREEN

Approve C. P. P. A. Organization Changes

Integration of Canadian Pulp and Paper Association and Newsprint Association of Canada Effected — Joint Executive Board Is Dissolved — Higher Taxes Proposed — Other Late Industrial News.

MONTREAL, QUE., February 4, 1946—Following last week's annual meeting of the Canadian Pulp and Paper Association, the industry has appraised and, in general, approved changes in the organization that have followed its partial merger with the Newsprint Association of Canada.

Heretofore the newsprint group has not always had identical interests with other pulp and paper producers and, in particular, where there has been a buyer and seller relationship between a newsprint producer and a pulp manufacturer. In addition, as 94% of Canadian newsprint shipments are for export, only 6% being consumed in Canada, the functions of the Newsprint Association are predominantly connected with questions of world trade and Canadian relations with other countries in which newsprint is a major factor. In this connection the Newsprint Association has developed a well-organized service for the supply of factual data regarding newsprint production, shipments, consumption and inventories and for interpreting such data for the information of producers and consumers in various countries.

The Association has also made it its particular business to function as the representative body of the Canadian newsprint industry in relations with important consumer organizations such as the American Newspapers Publishers Association and similar associations of publishers in Britain, Australia, New Zealand, Canada and other countries.

These services have proved a great constructive factor in the newsprint industry and of the utmost importance in solving difficult producer-consumer problems, as well as in removing misunderstandings and avoiding antagonistic relationships.

Integration of Trade Associations

Some time ago efforts at unification of the two Associations resulted in the establishment of a Joint Executive Board comprising members of the executive bodies of the Canadian Pulp and Paper Association and the Newsprint Association of Canada. To simplify procedures in such matters, the Newsprint Association held a general meeting last week coinciding with the general meeting of the Canadian Pulp and Paper Association, at which meetings decisions were arrived at whereby the Joint Executive Board was dissolved and its functions transferred to the Executive Board of the Canadian Pulp and Paper Association, the latter Board being reconstituted to include newsprint representation similar to that previously contained in the Joint Board.

This means that while the functions and status of the Newsprint Association remain unchanged, the Canadian Pulp and Paper Association is now esablished as the single representative body of the pulp and paper industry in matters and services relating to the industry as a whole. Such matters and services include research, technical and woodlands operations, pulpwood supply, public relations and general information, tariff and tax regulations and traffic problems. In addition to these general industry functions, the Pulp and Paper Association deals with particular problems relating to all pulp and paper products with the exception of newsprint, which latter remains under the purview of the Newsprint Association.

Under the arrangement, R. M. Fowler, president of the Canadian Pulp and Paper Association, becomes also the president of the Newsprint Association, both offices being permanent, and being correlated to assist the integration of the two associations. Under agreement previously made, Charles Vining, who has been president of the Newsprint Association since 1934, becomes chairman of that Association's Executive Committee. The firm of Stevenson and Kellogg Limited will continue as statistical agents of the Newsprint Association, and its president, Paul Kellogg, will continue as general manager of the Newsprint Association.

Members of Executive Boards

Members of the Canadian Pulp and Paper Association's Executive Board for the 1946-47 term, as reconstituted under the arrangements mentioned above, are as follow:

L. J. Belnap, president Consolidated Paper Corporation; George W. Brown, president and general manager Gair Company of Canada; Wentworth Brown, vice-president and managing director Brown Corporation; G. L. Carruthers, assistant general manager Interlake Tissue Mills Co.; G. T. Clarkson, receiver and manager Abitibi Power and Paper Co.; Paul E. Cooper, president Pacific Mills Limited; Aubrey Crabtree (Chairman of the Committee), president Fraser Companies Limited; Harold S. Foley, president Powell River Company; Elmer Herb, vice president and general manager Westminster Paper Company; J. H. Hinman president Canadian International Paper Company; C. H. L. Jones, president Price Brothers and Company and president Mersey Paper Company; R. P. Kernan, president Donnacona Paper Company; G. Gordon Gale, president E. B. Eddy Company; E. M. Little, president Anglo-Canadian Pulp and Paper Mills; A. Barnett MacLaren, president James MacLaren Company; J. R. S. McLernon, director Dryden Paper Company; F. G. Robinson, president Riordon Sales Corporation; J. Pierre Rolland, vice president Rolland Paper Company; Earl Rowe, president Great Lakes Paper Company; Arthur A. Schmon, president Ontario Paper Company; E. Howard Smith, vice president Howard Smith Paper Mills; R. L. Weldon, president Bathurst Power and Paper Company; A. F. White, managing director St. Lawrence Paper Mills; C. R. Whitehead, vice president Consolidated Paper Corporation.

The members of the Executive Committee of the Newsprint Association are as follow: J. L. Belnap, president Consolidated Paper Corporation; G. T. Clarkson, receiver and manager Abitibi Power and Paper Company; Harold S. Foley, president Powell River Company; R. M. Fowler, president of the Newsprint Association of Canada; J. H. Hinman,

(Continued on page 12)

Hodgdon Talks to Paper Makers

TURNERS FALLS, Mass., February 4—Employes of the Keith Paper company today had it straight from the shoulder that the firm is back in competitive business and that wartime work sloppiness no longer will be tolerated. In an address to the International Brotherhood of Papermakers, Paul Hodgdon, company president, said:—

"We have begun a new era in papermaking. During the war when our product was in great demand, we got by with everything and anything. We had an attitude that what we did was all right. Yes, the war helped the company and it helped the employes.

"Today the war is over and we are faced with the problem of competition. We must of necessity work harder. I do not mean to kill yourselves, but we must produce and when we find a person who isn't producing there is no room for such person or persons in our organization.

"The recent pay increases will cost the company $50,000 a year. To maintain that standard we must put our shoulders to the wheel to eliminate wilful waste in all departments.

"When you see a person disregarding those rules he is not only injuring the company but he is injuring each and every one of you."

Continental Buys Fibre Can

RUTLAND, Vt., February 6, 1946—The Fibre Can Machinery Corporation has been acquired by the Continental Can Company, according to Hans A. Eggerss, Continental's executive vice-president.

The machinery company was founded in 1937 for the purpose of developing and making high speed automatic machinery for the production of an improved style fibre container. These operations will now be continued under the direction of J. F. Price, manager of operations, Paper Division of the Continental Can Company. Mr. R. S. Condon, vice-president and chief engineer of the former company, will continue as chief engineer and plant manager.

The containers which are produced on machinery made by the Rutland subsidiary won a ready acceptance several years before the war, and millions are now being produced by Continental every month. They represent new basic principles of construction that provide greater protection against moisture vapor transmission, and consequently against deterioration of packaged hygroscopic materials.

Continental Can Company's Paper Division now comprises seven paper container, four fibre drum, and one corrugated box manufacturing plants; two paper mills; and the new Fibre Can Machinery Corporation.

Million for Southern Kraft Expansion

MOBILE, Ala., January 29, 1946—The Southern kraft division of the International Paper Company today announced plans for a $1,050,000 expansion program at its Mobile plant. J. H. Friend, company vice-president, said the expenditures would cover general improvements and plant modernization that had been postponed by the war. A substantial addition will be made to the testing and research laboratory.

The additions will increase the potential capacity of the plant by approximately 75 tons of Kraft paper per day. The plant here was established about 15 years ago and has a payroll of approximately 2,000.

Westvaco Celebrates Safety Record

ALTOONA, Pa., February 2, 1946—On Tuesday evening members of the safety committee of the Williamsburg plant of the West Virginia Pulp and Paper company and guests were honored with a dinner and program in the banquet hall of the Williamsburg Presbyterian church. The event marked the paper workers' triumphant attainment of the coveted president's safety trophy and the cash awards for 1945 sponsored annually by the company among its mills at Williamsburg, Tyrone, Mechanicville, N. Y., Covington, Va., Luke, Md., and Charleston, S. C.

The Williamsburg plant has the outstanding record of having won the president's trophy on three various occasions and the cash awards seven times. These records are concrete evidence of the enthusiastic compliance of the Williamsburg mill workers with the safety program sponsored by the company. The safety contest was inaugurated in 1934 by the late David L. Luke, former president of the company, and has been an active source of competition for all Westvaco employes since its inception and has greatly reduced the accident rate in the plants.

Pease Elected by Brownville

WATERTOWN, N. Y., February 4, 1946—Robert L. Pease was elected president of the Brownville Paper Company by the board of directors in a meeting held Tuesday afternoon. At the same time Seymour M. Jones was continued vice president, James H. Lingenfelter treasurer, Alfred L. Soper was elected secretary, and Albert W. Horr, assistant secretary. Howard M. Root continues as superintendent. Samuel A. Upham, who remains a director, was made chairman of the board.

These officers, excepting Mr. Root, and Mr. Upham, constitute the new owners of the company, having on Jan. 15 acquired the stock shares of former President Upham, for the past several years controlling factor in the company; the shares of the estate of George F. Clark, long secretary-treasurer and a director of the company; the shares of Mrs. Minnie F. Clark, widow of George F. Clark, who died on Monday; the shares of Mrs. Elizabeth S. Upham and the shares of Mr. Root.

Pulpwood Group Elects Earle

ATLANTA, Ga., February 3, 1946—T. W. Earle of Orangeburg, S. C., will head the Southern Pulpwood Conservation Association as president during 1946, succeeding C. O. Brown of New York city. Earle is vice-president of the Gair-Santee Corp., which has announced plans for building a $12,000,000 pulp and paper plant somewhere in the South.

At the closing session of the annual meeting, members voted to conduct conservation experiments in several localities in the South. Forest fire control, re-seeding and proper cutting methods will be studied.

Specialties Group Elects Sheehan

HOLYOKE, Mass., February 4, 1946—Walter B. Sheehan of Holyoke, president of the Missisquoi Paper company at Sheldon Springs, Vt., has been elected president of the Specialty Paper and Board Affiliates organization. Jack B. Cowie of Hollingsworth & Whitney Company was elected vice-president and G. D. Cook was reelected secretary-treasurer.

Johnson Joins Elof Hansson

George V. Johnson has joined the Paper Export Department of Elof Hansson, Inc. Mr. Johnson was, until his recent resignation, Director of the Forest Products Division, Civilian Production Administration. He has just been released by the Navy after twenty-two months service, a year of which time he spent overseas at Pearl Harbor.

Since last June Mr. Johnson was on loan from the Navy to the War Production Board and Civilian Production Administration. Prior to his entering the Navy he was Assistant Secretary of the Writing Paper Manufacturers Association.

Superintendents to Meet Feb. 21

PLAINVILLE, Mich., February 4, 1946—The next meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association will be held Thursday evening, February 21, at the Park-American Hotel, Kalamazoo. Dinner will be served at 6:30 P.M. Arthur G. Dreiss and D. D. Cameron of the Hercules Powder Company will present a paper on the use of Sulphuric Acid in the Sizing of Paper.

St. Regis Buys Nashua River Co.

The St. Regis Paper Company has purchased the Nashua River Paper Company, East Pepperill, Mass. The mill has a rated capacity of 350,000 pounds in twenty-four hours. It is a large producer of kraft paper, with a portion of the output devoted to production of high-grade paper specialties, including gummed tape, plasticized paper, crepe and coin wrap.

Hearst Buys Pejepscot Mill

The Hearst Consolidated Publications, Inc., has purchased the Pejepscot Paper Company, it was announced by Edgar S. Catlin, vice president of Pejepscot. The new Hearst unit is an old Maine producer of specialty papers and before 1942 manufactured newsprint. Mr. Catlin said that although some newsprint might be manufactured in the future, he did not anticipate any appreciable shiftover for the present.

Obituary

Matthew Lang

Matthew Lang, an executive officer and director of the Interstate Cordage & Paper Company, died at his Pittsburgh home, January 3, 1946. Born in Glasgow, Scotland, December 1878, Mr. Lang migrated to this country at an early age and in due time became a loyal and respected citizen and a member of numerous Masonic bodies. He has been associated with the Interstate Cordage & Paper Company since 1920. Mr. Lang is survived by his widow, Mary A. Lang, and two daughters, and will long be remembered by his business associates and many friends to whom his code of ethics and unfaltering loyalty will be a lasting inspiration.

Edwin H. Sublett

ROCHESTER, N. Y., January 19, 1946—Edwin H. Sublett, 63, secretary of Cramer-Force Company, wholesale paper merchants, died January 11 in his home here. A native of St. Louis, Mr. Sublett is survived by his widow and a daughter.

APPROVE CPPA CHANGES

(Continued from page 10)

president Canadian International Paper Company; C. H. L. Jones, president Price Brothers and Company and president Mersey Paper Company; R. P. Kernan, president Donnacona Paper Company; E. M. Little, president Anglo-Canadian Pulp and Paper Mills; C. H. Sage, president Spruce Falls Power and Paper Company; Charles Vining, chairman of the Committee, and A. F. White, managing director St. Lawrence Paper Mills.

Higher Taxes Proposed

Sweeping changes in taxation for school purposes, which would substantially increase the total impost on the pulp and paper industry and other industries in the province of Quebec, are recommended in the report of a commission which has been studying school and municipal taxation and of which one member is Jack Latter, director of personnel of the Anglo-Canadian Pulp and Paper Mills, Quebec. The purpose is to raise millions of dollars of new revenue to meet the expanding needs and growing cost of education. The report is now before the Provincial Government, which has published it in order to get public reaction before taking any definite steps in the matter.

The recommendations would provide these additional sources of revenue:

1. The duty of 10 cents per cord on pulpwood to be increased to 10 cents per cord on all wood cut in the province and to 50 cents a cord on wood manufactured outside the province, the income from this item to be $850,000.
2. Duties on sawn lumber to be increased from $1.60 per thousand board feet to $3.19 and collected from all the wood cut except for cordwood, this item to bring $1,000,000.
3. A duty on electricity of 10 cents per 1,000 kilowatt hours sold, to bring $5,000,000.

New Highs in Newsprint Exports

A report issued by the Newsprint Association of Canada shows that total production of newsprint in Canada in 1945 amounted to 3,259,208 tons, or about 267,500 tons in excess of the total in 1944. This was also an increase of 13.6% as compared with production in 1939, the last peacetime year. Shipments from Canadian mills to the United States in 1945 totalled 2,544,116 tons, and were about 115,000 tons greater than in the previous year, as well as about 350,000 tons greater than in 1939. The shipments to Canada in 1945 totaled 200,249 tons, as compared with 187,227 tons in 1944 and 189,482 tons in 1939, while shipments to overseas totalled 491,054 tons in 1945, as compared with 383,723 tons in 1944 and 477,594 tons in 1939.

The Association estimates that shipments from Canada in 1945 represented 75% of total U. S. newsprint supply, as compared with 62% in 1939. Shipments from Newfoundland represented 4% as against 2% in 1939, while shipments from U. S. mills represented 21%, as compared with 27% in 1939.

Newfang Retires as Canfield Head

At the meeting of Canfield Paper Company January 31st, Carl A. Newfang resigned, as president. He will remain as treasurer, but he is retired from management. Charles Elliott Canfield was elected president; Robert W. Newfang, vice-president.

Talk about wet strength . . .

Filled with water, this paper bag will not break. Its greater wet strength is provided by Uformite urea formaldehyde resins.

. . . and you'll talk about these resins!

UFORMITE 467

For Kraft—Add this urea formaldehyde resin directly to the beater and you'll obtain substantial improvements in wet strength—as well as increased dry, Mullen, tensile and fold strength—will be able to use less expensive pulps.

Its low cost plus ease of application make it an invaluable aid in the production of bag and wrapping paper, food wrapping, towelling, blueprint and map paper.

And Uformite 467 in no way affects the color, odor or taste of the paper—requires no special equipment to prepare the resin.

UFORMITE 470

For Rag, Sulfite and Ground Wood

To produce such papers as high wet strength glassine, light weight absorbent tissues, sulfite wrapping paper, chart and ledger papers, Uformite 470 is especially effective.

This urea formaldehyde resin is ideal for pulps when minimum acidity is essential. Acid may be used as the sole catalyst if alum is undesirable.

Uformite 470 requires no special handling, aging or pre-treatment. Added at the head box, chest or fan pumps, Uformite 470 imparts high wet and dry strength durability.

UFORMITE *is a trade-mark. Reg. U.S. Pat. Off.*

THE RESINOUS PRODUCTS & CHEMICAL COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Brown Will Modernize Berlin Mills

BERLIN, N. H., January 25, 1946—New sulphate pulp producing facilities, to be added to the Burgess sulphite pulp mill; and the installation of a new paper machine in its Cascade paper mill are major items in a modernization program for Brown Company's mills. Frederic G. Coburn, President, explains that plant layout and flow of work in other existing mills at Berlin, including the specialty pulp section of the Burgess pulp mill, are being streamlined to insure maximum efficiency of operation.

Sulphate pulps, produced both from softwood and hardwood, will be available in slush form to the Cascade and Riverside paper mills, providing the first step of a completely integrated operation. Sulphite and Alpha specification pulps will continue to be produced for market at the Burgess mill, consolidating the newest sections of that unit for maximum economy of operation and quality improvement.

The initial capacity of the sulphate pulp mill will be about 60,000 tons per year, and provision is made for both evolution of design and expansion of capacity. A new set of buildings is being erected in the yard of the present Burgess pulp mill to house the kraft digesters and to provide for installation of equipment and machinery for the liquor recovery cycle. A combination of the new sulphate with the present sulphite facilities in one mill will be extremely advantageous in operating economies and process developments. The new buildings, which will be of steel, brick and concrete, will be erected by Rust Engineering Company, Pittsburgh.

The utilization of slushed pulps from the new Burgess plants will provide flexibility, engineered quality and economy in the manufacture of Brown's specification papers. It will also result in freeing for the market a substantial portion of the pulp presently received from its subsidiary, the Brown Corporation's sulphate pulp mill at La Tuque, Canada.

The new 196-inch paper machine to be used for the production of towels is equipped with a Yankee dryer, and is designed to operate at a speed of 1,200 feet per minute. This machine is being built by Rice Barton Corporation of Worcester, Massachusetts. With this new machine using slush pulp, Brown Company foresees a lower cost of operation and a needed expansion in capacity, to take care of its increasing towel business. The two 156-inch machines presently producing towels will be released for manufacture of the Company's other paper products. Demand has for some time exceeded Brown's machine capacity.

The plans for Berlin are well within the limits of pulpwood available to the Company on a sustained yield basis. This was determined in advance by means of a comprehensive aerial and ground survey completed in 1944. O. C. Schoenwerk, Consulting Engineer, of Chicago, is acting as consultant to Brown Company in connection with all phases of its post-war program and modernization plans.

Mexican Paper Industry Expanding

WASHINGTON, D. C., February 4, 1946—Within the past 5 years ten new pulp and paper industries have been established in Mexico, says a report to the Department of Commerce. These new firms now employ about 580 persons and represent investments totaling $4,069,695.

South Plans Newsprint Mill

ATLANTA, Ga., February 4, 1946—Plans of Southern Newspaper Publishers Association for the erection of another newsprint mill in the South took definite shape at a meeting of the Newsprint Mills Committee and of the Board of Directors of the association at their meetings in Atlanta last week. The decision to proceed as rapidly as possible with the erection of the mill was made by the Board of Directors following the report of Clarence B. Hanson, Jr., chairman of the Newsprint Mills Committee. The Board accepted the committee's recommendations and suitable resolutions were adopted authorizing the committee to proceed with their negotiations with a group who in a meeting with the committee gave assurance that they were ready to finance the erection and operation of a mill under certain conditions, the nature of which will be made known to the membership as early as possible.

The group of industrialists and financiers indicated that the only support they would expect from publishers of Southern newspapers would be a guarantee that they would take the output of a 100,000 ton mill for a period of not less than five years and at the prevailing market prices for newsprint. This was the condition under which the Southland Paper Mills at Lufkin, Texas, was erected. The success of the Southland Mill in the five years in which it has been in operation, had much to do with the decision of the group to put their money in a newsprint mill.

The ultimate decision as to the site for the mill is in the hands of the group who will put up the money. They have had access to the report made by the newsprint engineer employed by the SNPA and other information assembled by the original committee of which Carl B. Short, now president of SNPA, was chairman. The site will be in the area east of the Mississippi. Certain factors have to be taken into consideration such as proximity to railroads, timber tracts, water, fuel, and power. The matter of freight rates on raw material and the finished product will be carefully considered.

It is estimated that the proposed 100,000 ton mill will represent an investment approximating $15,000,000.

Tissue Mills See Big Future

HOLYOKE, Mass., January 14, 1946—The probability of further development of its business as the result of a marked postwar trend was discussed Friday night by the executives and officials of the combined American Tissue Mills and the B. F. Perkins plant of this city. Some 25 were present at a dinner meeting at the Hotel Roger Smith with Benjamin F. Perkins, president of the Tissue Mills, presiding. J. Lewis Perkins, president of the B. F. Perkins company, also presented a graphic story of the trend in the industry in the past several months.

Central Ohio Co. to Erect Warehouse

INDIANAPOLIS, Ind., January 28, 1946—Expansion plans here of the Indiana branch of the Central Ohio Paper Company, 530 East Ohio street, call for a new warehouse adjoining the present building and also an increase of personnel. J. L. Davis is Indiana manager and vice president of the company.

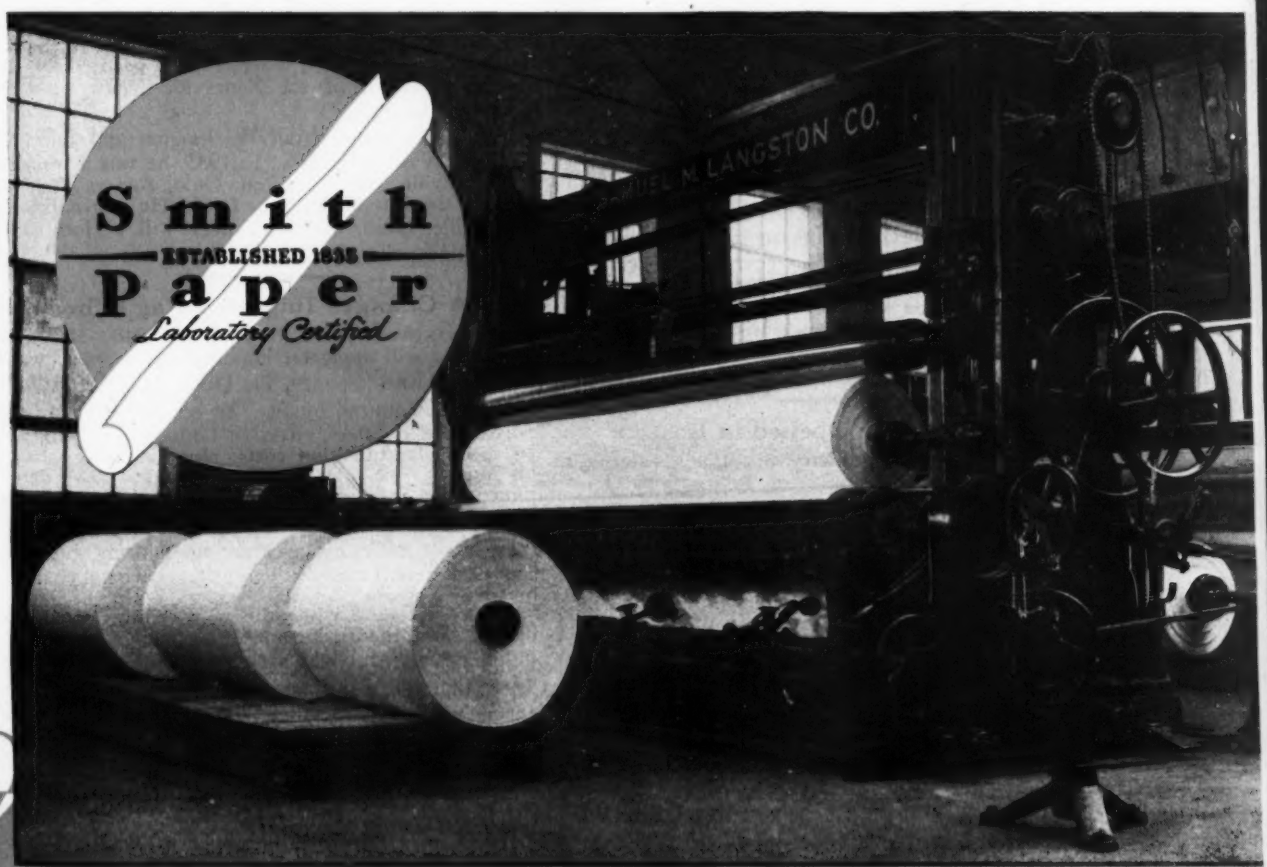
The new addition will have an approximate frontage of 100 feet on Ohio street and will be more than 195 feet deep.

Flint and steel have been associated in people's minds for a lot longer than any of us can remember. ***It has been a successful combination.***

So also is the team of Langston and Smith. Langston Slitters help Smith Paper, Inc., to turn out cigarette tissue of the very finest quality. There is no guesswork in that plant, thanks to Smith's 109 years of manufacturing experience, and the use of such dependable and efficient machinery as the Langston Slitter. For a true, clean cut, for rolls of uniform density from core to outside diameter, ***for unbeatable performance, high speed operation and low maintenance, specify Langston.***

SAMUEL M. LANGSTON COMPANY

CAMDEN, NEW JERSEY



Langston SLITTERS AND ROLL WINDERS

Mando to Install Radio Phone

MINNEAPOLIS, January 15, 1946 — Donald D. Davis, president of The Ontario-Minnesota Pulp and Paper Company, Limited, has made public details of a radio system that will be installed as a means of communication between mills of the paper company and its logging camps. "This addition to the company's facilities," Mr. Davis said, "calls for installation of four main stations, one at the Kenora mill, one at the Fort Frances mill, one at the logging headquarters camp at Camp Robinson in the Patricia Limits, and one at Camp Flanders in the Seine River Limits. In addition to these main stations, smaller units of the mobile type will be installed in the logging camps, themselves, in the areas of Ontario where company pulpwood operations are being carried on.

"The four main stations will be equipped with 250 Watt transmitters and in order to obtain clear and uninterrupted communication between Kenora and Fort Frances the antenna at these two points will have to be supported by masts 300 feet high. At logging headquarters at Camp Robinson and at Flanders, 60 feet masts will apparently suffice to provide communications with Kenora and Fort Frances, respectively; while at some of the individual logging camps communications can be satisfactorily obtained by using trees or masts to secure rotary for the support of the sending and receiving antenna.

"The system will be the latest development of the frequency modulation type and will operate on a twenty-four hour schedule but on a strictly non-commercial basis. All stations will be able to send as well as to receive, thereby permitting two-way communications."

This system of communication between camps and headquarters, it was pointed out, will serve to eliminate the isolation of the logging camps and thereby remove one of the most difficult and objectionable features that has been an inherent part of woods work. In addition to providing current contact for management of the operations, the establishment of radio communication will be particularly useful in cases of emergencies, such as accidents or illness, and in the event of the breakdown of the equipment or in the need for emergency supplies.

New Sales Office Opened in Boston

NEW YORK, N. Y., January 30, 1946—International Paper Products Division of International Paper Company has opened a branch sales office in Boston at 45 Milk Street. A. G. Clarke is district sales manager and his territory covers the New England states and New York state with the exception of Greater New York city which is included in the territory of the main sales office in that city.

International Paper Products Division has eight other branch sales offices, with district sales managers, located in Atlanta, Baltimore, Camden (Ark.), Chicago, Cleveland, Philadelphia, Pittsburgh, and St. Louis. The establishment of two more branch sales offices is under consideration at this time.

International Paper Products Division sells the heavy-duty multi-wall kraft paper bags made by Bagpak, Incorporated, and George & Sherrard Paper Company, wholly-owned subsidiaries of International Paper Company. The largest users of these multi-wall bags are the cement, fertilizer, lime and limestone, food products, and chemical industries.

Alexander Joins Mando Staff

MINNEAPOLIS, Minn., February 4, 1946—L. A. Furlong, director of public relations of Minnesota and Ontario Paper Company, has appointed James E. Alexander as assistant director of public relations for M. & O. For the past three years Mr. Alexander has been Sunday editor of the Minneapolis

JAMES E. ALEXANDER

Star Journal and Tribune. He came to Minneapolis from Zanesville, Ohio, where he had been editor and managing editor of the Zanesville *News* since its founding in 1939.

After graduation from Washington and Jefferson College, Washington, Pa., in 1935, he was a reporter in Zanesville, on the Akron, Ohio, *Beacon Journal*, and on the Pittsburgh, Pa., *Press*. He is a native of Zanesville, Ohio. Mr. Alexander will be located in the Minneapolis office of Mando.

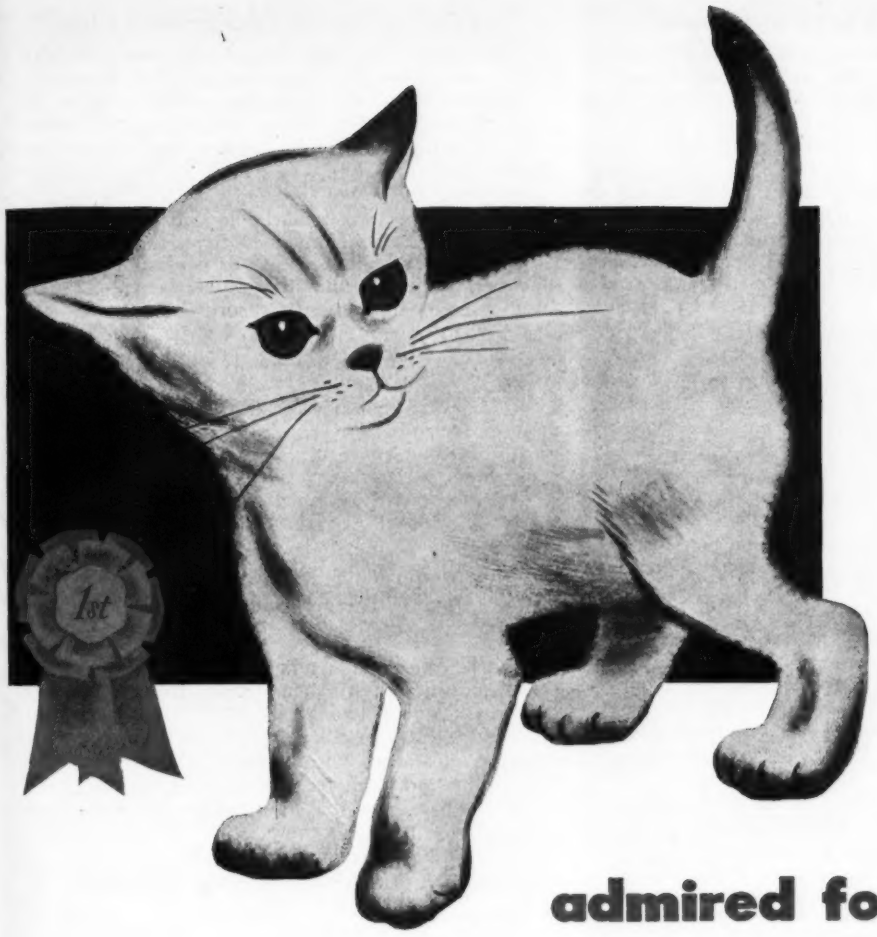
OPA Changes Imported Rag Schedule

WASHINGTON, D. C., January 28, 1946—New ceiling prices will apply on imported waste rags, waste ropes and waste strings, the Office of Price Administration announced today. The ceilings for both importers and resellers, effective January 30, 1946, will be specified acquisition costs, plus a mark-up based on March 1942 practice. The ceilings will be determined upon individual application to OPA's national office, Export-Import Branch. Main consumers of these waste materials are roofing, flooring and specialty felt manufacturers. Felt ceilings are not changed by today's action.

OPA said that, while the new ceilings would be higher than the dollar-and-cent ceilings previously in effect, in many cases they would be under the prices that felt manufacturers were paying for more expensive substitutes they were buying because of inability to import the normally-bought low-grade waste rags under the ceilings heretofore in effect.

New Converters Organize

BAY SHORE, N. Y., January 14, 1946—The Commercial Paper Converters, Inc., is organizing a converting business to manufacture scratch pads, legal and letter ruled pads, spiral wired stenographers' note books, school and price book fillers and allied items.



admired for her coat

Coated paper, likewise, is in demand by people who appreciate quality. And the production of really fine coated paper at high speed calls for Precipitated *Calcium Carbonate* to be used with clay and other pigments. For several years it has been the business of Wyandotte Chemicals Corporation to produce Precipitated Calcium Carbonate. As a result of the "know how" thus acquired, we are in a position to offer industry a proved, *superior* product. Wyandotte Calcium Carbonate excels in brightness . . . in hiding power . . . in ink absorption . . . in freedom from grit and abrasiveness . . . in the uniformity which is essential to machine coating. To care for the increasing demand for Calcium Carbonate, Wyandotte is increasing its production capacity. So in the future—as now—you can look to Wyandotte for better paper coating.

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • DRY ICE
CALCIUM CHLORIDE • CHLORINE • HYDROGEN • SODIUM ZINCATES • AROMATIC INTERMEDIATES • Other Organic and Inorganic Chemicals

Wyandotte
REG. U. S. PAT. OFF.

WYANDOTTE CHEMICALS CORPORATION • MICHIGAN ALKALI DIVISION • WYANDOTTE, MICHIGAN

Paper Demand Heavy in Indiana

INDIANAPOLIS, Ind., January 24, 1946—No diminution in the demand for paper in the local wholesale market has been seen with the coming of the new year and none is expected unless the strike situation gets entirely out of hand. However, the local trade believes that this section, which will be heavily affected by a series of continued strikes, will see some falling off in paper demand. This will be particularly true in the case of the container trade. Most of the steel workers in this section jumped the gun on the steel strike and left their jobs last week. Large local plants like Link-Belt and E. C. Atkins & Co., were idle today and will continue idle until the employes get orders to return to work from their union leaders.

Newsprint demand last week continued heavy with papers reporting increased advertising lineage and the publishers are taking up to their quotas in print. Tissue demand also was heavy with cleaning tissues reported somewhat more plentiful. Cellophane and waxed papers also were moving nicely.

Paper box factories in the local area were producing to the limit of their raw material supplies, which are reported to be improving slightly. The labor situation has improved somewhat, but there can be further improvement.

Building paper and roofing demand has fallen off due to severe weather. Even when the weather permits outside work, it is doubtful if demand will be increased largely because of lack of other building materials and lack of skilled labor. It is pointed out that few skilled building laborers have been created in the last five years.

Demand for rags of all kinds continued heavy last week with mills taking all available supplies. Collections have been none too good it is reported.

Waste paper demand also continued strong. Here, however, there was reported some collection improvement. Prices were unchanged.

Forestry Group Tours East

SYRACUSE, N. Y., February 4, 1946—The New York State School of Forestry at Syracuse University was the first stop of a committee of research experts from the U. S. Forest Products laboratory at Madison, Wis., touring the northeastern States to promote the use of hard woods in the pulp and paper industry.

Stating that the almost exclusive use of soft woods in the industry has reduced the supply of fir and spruce to the danger point, Fred C. Simmons, member of the group, said the aim of the tour of eastern mills and laboratories is to inform manufacturers what research has accomplished and find what problems exist in the industry.

The extensive logging of soft woods has created a dangerous forest condition, with insect epidemics in hard wood, and an alarming depletion of young fir and spruce, Mr. Simmons said. Utilization of hard woods in paper making has doubled in the last three years, due to war conditions, while importance of soft wood has increased, he pointed out.

The tour of inspection and consultation will take the Madison group through the Adirondacks and paper mill towns in New York State, to Vermont, New Hampshire, Maine and Pennsylvania.

The Forestry College in Syracuse was the first eastern stop-off made by the group during which they inspected the pulp and paper laboratory at the college where extensive research in the use of hard woods is being conducted.

Form Hamersley Old Timers Club

GARFIELD, N. J., February 1, 1946—Forty-five men and women who have been employed at the Hamersley Manufacturing Company continuouslyfor 25 years or more met Saturday evening at the Ridgewood Country Club and formed the Hamersley Quarter Century Club.

Speakers at the banquet and first meeting of the club said that it was remarkable that in a company of the size of the Hamersley firm, there were 45 employes of 25 or more years of continuous service. The number represents approximately 15 per cent of all present employees, a record the speakers said was hard to equal.

Walter L. Dawson, president of the company, was elected first president of the club and Miss Marjorie A. Colton was chosen secretary. Mr. Dawson heads the list of members in length of employment with 47 years with the concern. However, there are many other employees close to his unusual record.

A high spot of the evening was the surprise presentation by Arnold G. Hamersley, grandson of the founder and Hamersley vice-president, of an engraved gold watch to each member of the club. He told the membrs that the watches were "tokens of heartfelt appreciation of their long and faithful services."

Arthur Schwab, managing director, presented engraved certificates of membership to each of the veteran employees. In addition each member received from Harold A. Smith, secretary, a gold lapel pin indicating his club membership. The dinner was attended by approximately 100 persons, including the wives of the Quarter Century Club members and guests.

Need 15,000 More Woods Workers

TORONTO, Ont., January 26, 1946—An additional 15,000 workers are needed in the Canadian woods, Hon. Humphrey Mitchell, minister of labor, said yesterday. The greatest number of men are needed in Quebec, but there are "considerable" vacancies in Ontario, New Brunswick and Alberta, Mr. Mitchell said. Advance reports indicate production of logs for lumber and for pulp is above that of last year, but, the minister pointed out, in view of the large domestic and overseas requirements, there is need for as large an output as possible. "Due to the shortness of the remaining season it is important that all camps be filled as soon as possible", Mr. Mitchell said. "Although experienced workers are most in demand, there are opportunities for any physically fit men who have suitable clothing. There is still time before spring for a man to make a good stake." Mr. Mitchell pointed out that some transportation assistance will be given in some areas as encouragement to men to accept woods work. "We feel confident that this year will see one of the richest timber cuts in history," Mr. Mitchell said.

Blankinship Joins Perkins-Goodwin

Perkins-Goodwin Company has appointed Stanford G. Blankinship to the company's pulp department. Mr. Blankinship was for many years general pulp superintendent of the Brown Company, later production manager of Port Royal Pulp and Paper Company, and president of the Port Royal Sales Company. He is also a past president of the American Pulp and Paper Mill Superintendents Association and has been a member of Tappi for many years.

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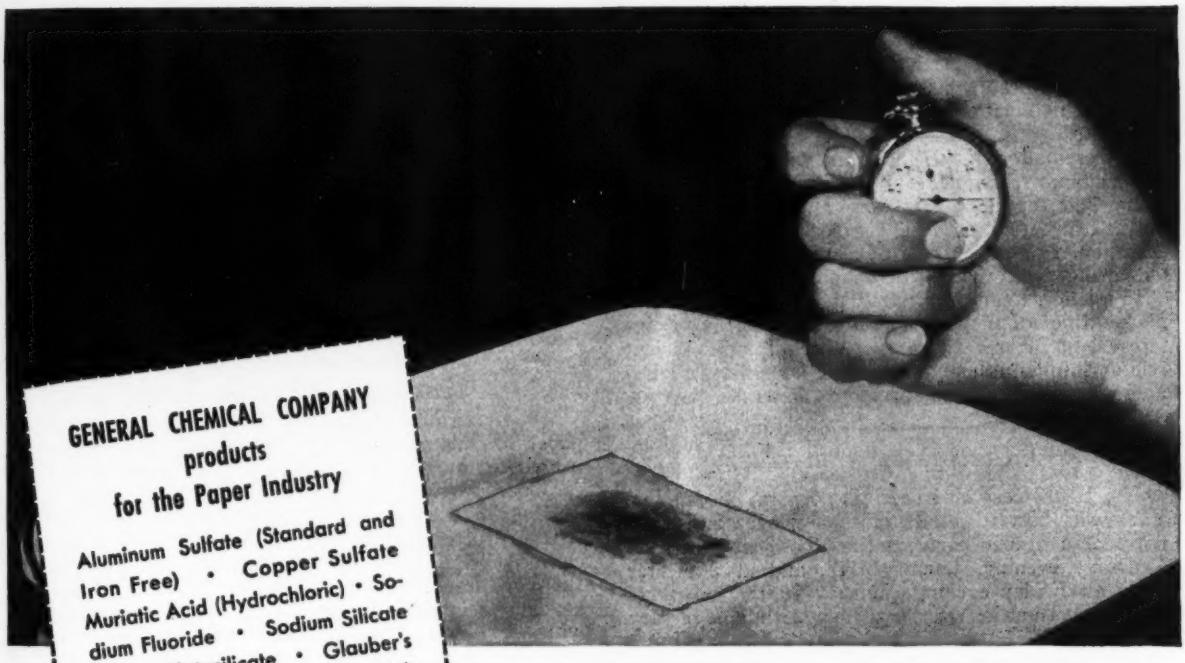

GENERAL CHEMICAL COMPANY products for the Paper Industry

Aluminum Sulfate (Standard and Iron Free) • Copper Sulfate • Muriatic Acid (Hydrochloric) • Sodium Fluoride • Sodium Silicate • Sodium Metasilicate • Glauber's Salt (Crystal or Anhydrous) • Salt Cake • Sodium Sulfide • Sodium Hyposulfite • Sodium Sulfite (Anhydrous) • Sodium Bisulfite (Solution or Anhydrous) • Disodium Phosphate • Trisodium Phosphate • Tetrasodium Pyrophosphate • Sulfuric Acid • Nitre Cake (Sodium Bisulfate) • Nitric Acid

TODAY more than ever, paper makers are insisting on General Chemical "Alum" in their operations because they can rely on its uniformity for maximum sizing and desired pH.

Careful attention to all production details plus constant laboratory control make General Chemical Aluminum Sulfate a product of high quality in its various grades. Specify "General" for your quality paper-making chemicals!

ALUMINUM SULFATE

Standard—Lump; Ground 99% thru 8 mesh, 95% thru 10 mesh; Powdered 95% thru 100 mesh.

Iron Free—Lump approx. 2½"; Ground thru 8 mesh.

SODIUM SILICATE

Solutions: from 38°—60° Baume. Wt. Ratio (Na_2O to SiO_2) from 1:2.00—1:3.40.

Appearance: Opalescent to clear.

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TAPPI Receives Navy Citation

R. G. Macdonald, Secretary of the Technical Association of the Pulp and Paper Industry has released the following letter received from the Navy Department:

"It is our distinct pleasure to advise you that the Navy's Certificate of Achievement has been awarded to your organization.

"This certificate signalizes the Navy's recognition of the splendid effort put forth by the men and women of your organization in support of the war production program.

"We hope that you will express to these men and women the Navy's sincere appreciation and thanks".

Frederick W. Wile, Jr.
Lieut. U.S.N.R.
Acting Chief, Incentive Division

This Certificate was awarded to the Association upon the nomination of the Bureau of Supplies and Accounts.

A presentation of the Certificate will be made to the Association at its annual luncheon on Thursday, February 28th, at the Commodore Hotel in New York City. Rear Admiral H. D. Nuber (SC) USN., the Asst. Chief of the Bureau of Supplies and Accounts, will make the formal presentation.

In a letter, Rear Admiral W. J. Carter (SC) U. S. Navy, Chief of the Bureau states: "The Navy is interested in a continuation of its friendly and efficient relationship with the industry and I hope that Admiral Nuber's attendance will promote this end".

Ross Celebrates Anniversary

The J. O. Ross Engineering Corporation of New York was host to all its office employes and their wives at a dinner party at the Roosevelt Hotel on Thursday evening, January 17th, and at a theater party on Friday evening, January 18th. The events were in celebration of the firm's 25th anniversary and nearly 200 guests were present at the dinner party, including employes from all the company's offices in New York, New Brunswick, N. J., Boston, Chicago, Detroit, Los Angeles, and Canada. Attractive souvenirs of the occasion were presented to the ladies.

A feature of the event was the presentation of a beautiful silver gift from the employes to J. O. Ross, founder of the business and now Chairman of the Board. Gifts were also presented to Mr. F. W. Partsch of Boston, Vice-President, and Richard Schultz, both of whom were members of the original organization during the year of 1921 when the business was started.

Mr. S. W. Fletcher, President of the company presented the gifts for the employes and in response Mr. J. O. Ross gave a short talk in which he briefly outlined some of the interesting facts concerning the founding of the business and some of the highlights of its remarkable progress and growth during the past quarter century.

Pacific Improvement Gets Under Way

SEATTLE, Wash., January 28, 1946—Construction crews will start construction work on the Pacific Coast Paper Mills extension soon after Feb. 1, the company said in announcing the awarding of the building contract to Howard S. Wright. The two-story concrete structure will cost about $45,000.

Scott to Vote on Changes

Scott Paper Company stockholders, at the annual meeting March 28, will vote on three proposals to change the company's capital setup. The proposals include a reduction in authorized preferred shares from 129,780 to 59,780, the number now outstanding; authorization of 150,000 cumulative preferred shares, no par; and an increase in the number of authorized common shares, no par, from 1,000,000 of which 804,742 are presently outstanding, to 2,000,000.

T. & H. Calendar Features Lighthouses

BOSTON, Mass., February 4, 1946—Tileston & Hollingsworth, manufacturers of Papers of Old fashioned Quality, for more than 145 years, have issued their Calendar, made of their products and printed by New England printers. The Calendar, late in appearing this year, due to conditions, which is always distinctive, shows a famous lighthouse of New England on each sheet.

Paul A. Bennett, head of the Department of Linotype Topography of the Mergenthaler Linotype Company, will be the critic of this 23rd Annual T & H Calendar at the Hotel Gardner, February 18.

Other dates for analysis of the Calendar are: February 14, Highland Hotel, Springfield, Mass; February 20, Providence Shrine Club; February 21, Aurora Hotel, Worcester, Mass.

French Paper Output Low

WASHINGTON, D. C., February 4, 1946—French paper production during the latter part of 1945 appeared confined largely to output of wrapping paper, cardboard, writing papers and newsprint.

Paper production in that country was 22,900 short tons in July, compared with 25,100 tons a month earlier, and 104,700 tons monthly average in 1938. Increased imports from the United States and Canada have augmented French newsprint stocks, it is stated, with a combined figure of 18,000 tons reported from this side of the Atlantic in the third quarter of 1945. In September France imported over 3,000 tons of newsprint from Sweden and about 1,100 tons from Norway.

Institute Appoints Dr. Shallcross

APPLETON, Wis., February 1, 1946—Dr. Ruth Shallcross has been appointed to the staff of the Institute of Paper Chemistry. Dr. Shallcross carried out her undergraduate work at the University of Nebraska and received her Ph.D. degree in economics from Bryn Mawr College. Post-graduate study included work with H. Parker Willis and Ralph Robey of Columbia University, Paul Arndt of Frankfurt University and other well-known economists in London. She has taught economics at Bryn Mawr and is the author of several articles and pamphlets.

During the war Dr. Shallcross co-ordinated the statistical and informational activities of the War Production Board as they related to the pulp, paper, and related industries. In this capacity, she had an unusual opportunity to acquire information and knowledge of sources regarding raw materials and other important manufacturing and economic aspects of the industry. At the Institute Dr. Shallcross will participate in handling special educational assignments and will carry on research related to the economics of the pulp, paper, and board industries.

Delaware Valley TAPPI Discusses Pumps

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineer's Club on Friday, February 1st for their regular dinner meeting. In the absence of Mr. Bixler, John Macadam of the National Vulcanized Fibre Company presided, and announced the appointments made by Mr. Bixler. C. M. Connor of the Glassine Paper Company was appointed chairman of the Nominating Committee. John Davis of Mead Corporation and John Weidner of the Container Corporation were asked to serve on this committee.

The section was also asked to consider renewing the old pre-war policy of a final June outing and dinner dance to close the season's activities and to express their desires at the next Section meeting.

Mr. Forrest Brainerd of the Scott Paper Company, who is our Section's National TAPPI representative, collected the questionnaire on the proposed policy and a possible National committee for our Section to sponsor and promised to announce the results at our next meeting.

Kingdon Watt of Curtis Paper Company introduced the speaker, George V. Shaw, of Ingersoll Rand Company, New York City, who gave an illustrated lecture on paper mill pump requirements.

Those present included: W. J. Ash, E. R. Bublitz, Alan R. Boyd, F. W. Brainerd, C. L. Brickman, H. C. Brill, S. G. Briscoe, K. W. Britt, Arnold M. Brown, Edw. Buckalew, J. W. Burke, Charles W. Carr,Jr., John Carson, C. T. Chapman, Theodore M. Chemerys, C. M. Connor, O. C. Cordes, J. C. Dieffenderfer, W. P. Dohne, J. E. Doyle, J. R. Dufford, Jerry Eberz, James M. Farnum, Harrison J. Farra, Geo. D. Forristall, Hobart L. Geer, Ralph E. Green, P. R. Griffin, L. V. Hans, Geo. J. Harlon, J. C. Harper Jr., H. F. Hoffmann, Arthur W. Hupp, Harry Hulmes, Sewell T. Jamison, A. L. Keeler, F. L. Lucker, H. T. Lundquist, John Macadam, John W. MacAllister, Geo. B. Martin, C. S. Maxwell, K. D. McCrudy, Louise E. McGrath, Alex McInnes, H. C. Merritt, George V. N. Morin, B. L. Morgan, Warren T. Palmer, F. W. Rapp, W. M. Ross, C. T. Ryder, Alan Schenck, Edw. A. Shallcross, George V. Shaw, George C. Shertenleit, M. H. Simon, Harry C. Stevenson, Howard H. Street, Geo. M. Suydam, R. Tutt, Jr., Lew Wallace, G. C. Walton, S. S. Watson, Kingdon R. Watt, A. E. Waugh, John P. Weidner, W. E. Welsh, R. Wiggins, Ray Wilcox, William T. Zellen.

St. Josephs Starts New Course

PHILADELPHIA, PA., February 6, 1946—St. Joseph's College, 54th Street and City Line Ave., will sponsor a course on paper machines this spring for the benefit of the mills in the Delaware Valley region. Following is the schedule of lectures:

March 7.—Wires and Felts, by G. Douglas Fronmuller, Scott Paper Co., Chester, Pa.

March 14.—Principles of Cylinder Formation, by Philip H. Goldsmith, Pusey & Jones Corp., Wilmington, Del.

March 21.— Cylinder Forming Parts, by Mr. Goldsmith.

March 28.—Rubber on Cylinder and Fourdrinier Machines, by Harry Hulmes, United States Rubber Co., Philadelphia, Pa.

April 4.—The Primary Press and Press Parts of Cylinder Machines, by E. T. Street, Downingtown Mfg. Co., Downingtown, Pa.

April 11.—Drying and Finishing Operations on Cylinder Machines, by G. Reneger, Container Corp. of America Manayunk, Pa.

April 18.—Mechanical and Electrical Drives for Cylinder and Fourdrinier Machines, by C. H. Rice, Westinghouse Elec. & Mfg. Co., Philadelphia, Pa.

April 25.—Maintenance and Operation of Cylinder Machines, by Ellman Smith, Union Mills Paper Mfg. Co., New Hope, Pa.

May 2.—Product Requirements and Machine Troubles on Cylinder Machines, by Mr. Reneger.

May 9.—Summary and Review, by F. Crysler, Container Corp. of America, Manayunk, Pa.

Anyone interested in taking this course should communicate with Joseph J. Molloy, S. J., at St. Joseph's College.

Changes in TAPPI Annual Meeting

Supplementing the program of the annual meeting of the Technical Association of the Pulp and Paper Industry (February 25-28, 1946), published in the Paper Trade Journal of January 24th are the following items:

Monday, February 25:

Add to Fibrous Agricultural Residues Session—Flax Straw Procurement, by L. F. Dixon, Central Fibre Corporation. The paper on the MM Proposal by J. H. Londergair of the National Paper Trade Association has been withdrawn.

Tuesday, February 26:

Add to General Session—Studies of Rosin Sizing, Part I. Use of Sulphuric Acid in Sizing, by D. Price and D. D. Cameron, Hercules Powder Company.

Add to Alkaline Pulping Session—The Deinking of Waste Paper—An Analysis of the Mechanism of Washing, by R. T. Mashburn and H. O. Ware, Hercules Powder Company.

The papers by Cyril Delaventi, P. B. Hansen and D. O. Adams have been transferred from the Acid Pulping Session to the Fundamental Research Session.

Wednesday, February 27:

Add to Water Session—Work of the Cincinnati Laboratories on Stream Pollution, by H. W. Streeter, U. S. Public Health Service.

Note: The Water Session which is being held jointly with the American Institute of Chemical Engineers has been transferred from the Biltmore to the Pennsylvania Hotel.

Note: The meeting at the Pennsylvania Hotel will be featured by a joint luncheon at which the principal speaker will be Major Edward W. Lafferty, Military Advisor to the Chinese Government.

Papermaking Session—The paper by D. Manson Sutherland on Modern Continuous Beating and Refining has been transferred from the General Session to the Papermaking Session.

Thursday, February 28:

The paper by E. K. Stilbert and C. E. Libby on The Effects of Starch on Sizing and Strength Properties of Paper has been withdrawn from the program.

Registration facilities will be available late Sunday afternoon and early evening, February 24th, on the Ball Room floor of the Commodore Hotel.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending February 2, 1946

STOCKS

	High	Low	Last
A. P. W.	10⅝	9⅜	10⅜
Armstrong Cork Co.	57¾	54½	55
Celotex Corp.	25⅞	24⅝	25¼
Celotex Corp., pf.	21½	20¾	21¼
Certain-Teed Products Corp.	18⅛	17⅞	17⅜
Certain-Teed Products Corp., pf.	110	110	110
Champion Paper & Fibre Co.	51¼	49	50½
Champion Paper & Fibre Co., pf.	114	113	113
Congoleum Nairn Co.	36⅞	35⅝	35⅞
Container Corp. of America	45	42½	44½
Continental-Diamond Fibre Co.	16¾	15¾	16¼
Crown-Zellerbach Co.	31¾	30¾	31¾
Crown-Zellerbach Co., pf.	109	108	108¾
Dixie Cup Co.	49¼	49	49
Dixie Cup Co.—A	56¾	55	55
Flintkote Co.	39⅝	38¼	39⅛
Flintkote Co., pf.	112¼	111½	111½
Robert Gair	11⅞	10⅞	11⅛
Robert Gair, pf.	20¼	19½	20
International Paper Co.	46⅝	43⅜	43⅝
International Paper Co., pf.	121¾	119½	121
Johns-Manville Corp.	154	148	154
Johns-Manville Corp., pf.	141½	137¾	137½
Kimberly-Clark Corp.	66	64½	64½
Mac Andrews & Forbes	42¾	40	40
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	61⅞	60¾	61¼
Mead Corp.	26¾	23½	24¾
Mead Corp., pf. A—6%	106	104½	104½
Mead Corp., pf. B—5½%	106½	103	104½
National Container Corp.	29⅛	27½	27½
Paraffine Companies, Inc.	82½	80	80
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	28	26	27½
Rayonier, Inc., pf.	38	37¾	38
Ruberoid Co.	50½	49	49¾
Scott Paper Co.	57¾	54	57¼
Scott Paper Co., pf.	108	107	107
Sutherland Paper Co.	40½	39½	40
Union Bag & Paper Corp.	26⅝	25⅛	26¼
United Paperboard Co.	13⅛	12¾	12⅝
U. S. Gypsum Co.	116	112	116
U. S. Gypsum Co., pf.	202	202	202
West Virginia Pulp & Paper Co.	44	39¾	43¼
West Virginia Pulp & Paper Co., pf.	115	114	114½

BONDS

Abitibi Pulp & Paper Co. 5s '53	108¼	107	107¼
Celotex Corp. 3¾s '55	...	...	...
Certain-Teed Products Corp. 5½s '53	...	...	...
Champion Paper & Fibre Co. 3s '65	105½	105½	105½
International Paper Co. 6s '55	108½	105⅞	108½
International Paper Co. 5s '47	103⅛	103¼	103¼
Mead Corp. 3½s '53	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending February 2, 1946

STOCKS

	High	Low	Last
Great Northern Paper Co.	44	43½	44
Hummel-Ross Fibre Corp.	13½	12¾	12⅞
St. Regis Paper Co.	11½	11	11¼
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	10⅜	9⅞	9⅞

BONDS

American Writing Paper Co. 6s '61	103	102⅝	102⅝

Defer Calling Great Lakes Bonds

TORONTO, ONT., February 4, 1946—Difficulties in completing the required formalities called for by its charter, in time to refund the bonds on April 1, are responsible for the postponement of the redemption of the 5% bonds of Great Lakes Paper Company., it is understood. The bonds are due October 1, 1955. However, their refunding is still under consideration and reports in financial circles indicate that an important change in the company's capital structure may be proposed when the refunding is finally announced.

The bonds are callable only on 60 days' notice on an interest date (April or October1). Outstanding were $4,831,060 bonds at December 31, 1944, callable at 102 and payable in Canadian or U. S. funds.

Sutherland Nets $2.12

The Sutherland Paper Company for 1945 reports a net profit of $609,002, or $2.12 a common share, against $710,099, or $2.47 a share in 1944.

Consolidated Paper Votes Dividend

MONTREAL, QUE., February 4, 1946—One of the most heartening occurrences in the pulp and paper industry here is the announcement by Consolidated Paper Corporation Limited that an initial dividend of 50 cents per share has been declared on the no-par-value shares of the corporation from earnings for the year ended December 31, 1945. The dividend is payable on March 1 to shareholders of record February 9. This supplies concrete evidence in its most pleasing form of the successful completion of the rehabilitation of the pulp and paper industry following a long period of financial difficulties in the course of which practically all the larger companies not privately owned had gone through the throes of bankruptcy and financial reorganization. Consolidated Paper is not only one of Canada's largest producers of newsprint, with a daily capacity of about 2,000 tons, but also produces large quantities of kraft paper, kraft pulp, cardboard wrapper, sulphite pulp, sawn lumber (white and red pine) and miscellaneous products.

Active trading in the shares of the company has been in evidence throughout the past year and in the first two hours of the day following the dividend announcement nearly 7,000 shares changed hands on the local stock exchange, the price rising fractionally to a new current high at 18, the best level since 1937, when it attained a high of 24½. Last year the stock climbed from 8 to 16⅞, and during the first month of this year it ranged between 16 and 17½. The stock was active in January, when over 100,000 shares changed hands.

Brantford to Improve $300,000 Worth

TORONTO, ONT., February 4, 1946—A plant expenditure program to cost $300,000, to improve manufacturing facilities of Brantford Roofing Company, was revealed by President Arnold C. Hitchon at the annual meeting last week. Funds are already in hand from the $500,000 new bond issue sold privately last fall.

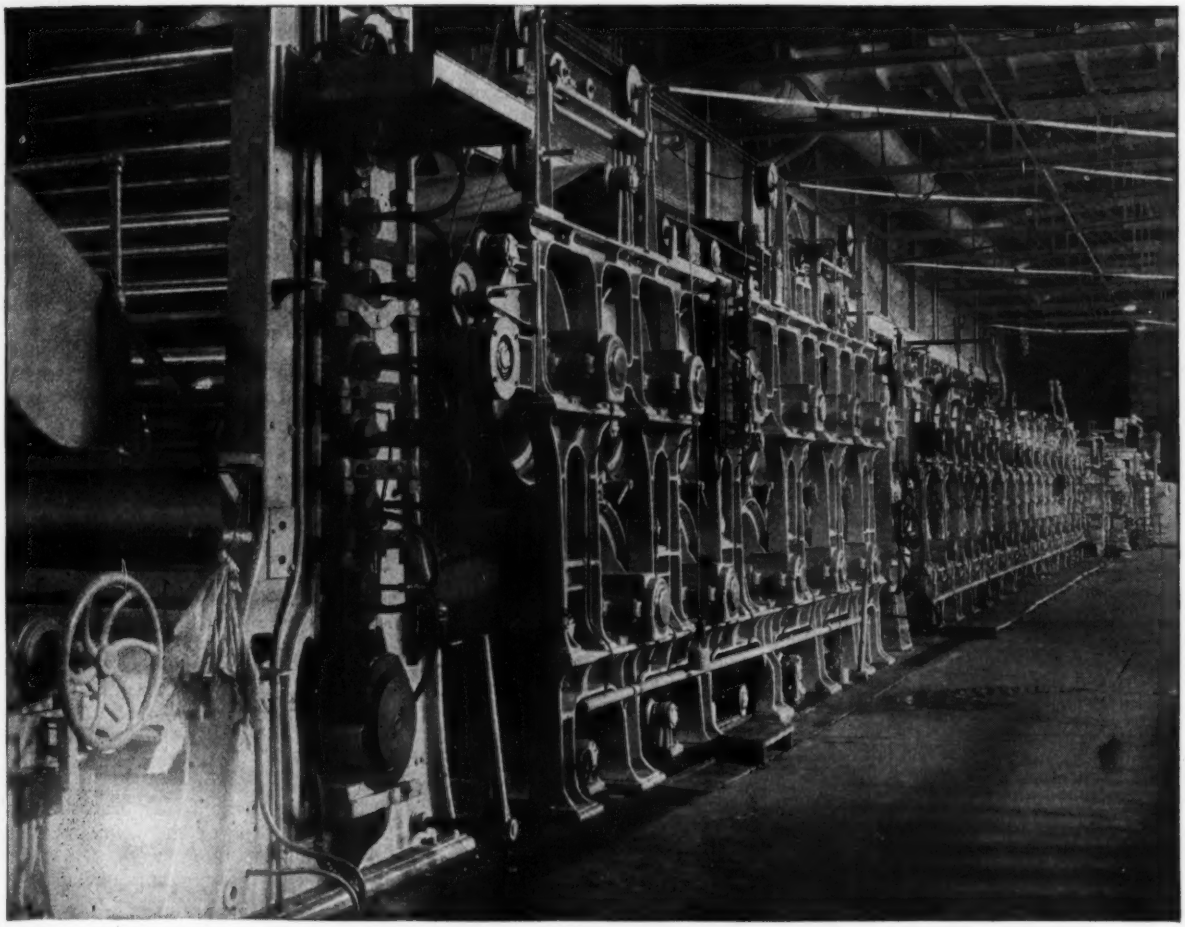
A new plant for the manufacture of insulated siding, to be erected at Brantford, Ont., will substantially increase the production of this building material, Mr. Hitchon stated. Machinery of the most modern design is now under construction and the plant is expected to be operating fully toward the end of 1946.

In addition, about $70,000 will be spent to install new equipment in the plant at St. John, N. B., only manufacturer of ashfelt shingles in the Maritimes. Future demands for products will tax capacity for some time, as the need for homes far exceeds the supply of essential building materials, according to Mr. Hitchon.

Warren Declares Dividend

BOSTON, MASS., February 4, 1946—A dividend of 50 cents per share has been declared upon the common stock of S. D. Warren Company, payable March 1, 1946, to holders of record at the close of business on February 15, 1946.

A dividend of 96 cents per share has been declared upon the $4.50 Cumulative Preferred Stock of the company, payable March 1, 1946, to holders of record at the close of business on February 15, 1946. Ninety-six cents is the dividend per share which will have accrued on this Preferred Stock from December 14, 1945 (the date of issue) to March 1, 1946.



PROOF that you don't have to worry about CLUTCHES

Without exception, users of Fawick Airflex Clutches earn these advantages:

1 Torque, shock and vibration absorbed by air cushion.

2 No moving or wearing parts—no arms, springs or levers.

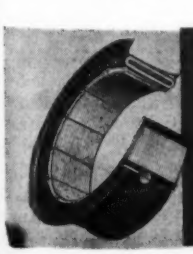
3 Direct or remote control by compressed air.

4 Uniform clutch engagement, controlled by a cushion of air.

5 No adjustments to make—no lubrication required.

6 Maintenance costs reduced — operation improved.

Ask our Engineering Department for recommendations to fit your machinery.



FAWICK *Airflex* CLUTCH

FAWICK AIRFLEX CO., INC., 9919 Clinton Road, Cleveland 11, Ohio

WISCONSIN EMPLOYMENT UP

(Continued from page 7)

lowed by a banquet and bowling tournament at the Paper Inn. The team representing the Erie, Pa., office was presented with a trophy awarded each year to the champion bowlers.

The Chicago office of Nekoosa-Edwards was represented at the three-day meeting by I. N. Frisy, C. A. Hodlmair, John H. Manske, A. L. Brown, R. E. Bloomstrand and W. E. Nash, Jr.; New York sales office, by M. A. Vanderheiden, D. E. Smith and Glenn Booton; Erie, Pa., by Ray W. Herzog, and Atlanta, Ga., by Ward Rosebush.

Thilmany Again Wins Safety Award

For the third successive year, the National Safety Council has awarded a trophy to the entire fleet of trucks operators of Thilmany Pulp and Paper Company, Kaukauna, Wis. The operators are credited with a total of 223,261 miles of safe driving without an automotive accident. In the last 12 months, the fleet traveled a total of 78,780 miles, private city trucking, without an automotive accident.

W. C. Hess is in charge of the department of transportation, which has nine trucks in the fleet. Safe driver awards were presented at a recent dinner.

Gerald Smits and Marvin Busse received awards for 8 years of safe driving; Earl Alger and Raymond Britten, 6 years; George Huss and Everett Hannemann, 5 years; Robert Wegand, 3 years; Albert Kersten, Jr., and William Zahn, 2 years, and Hugo Wenzel, 1 year.

The dinner was sponsored by the Kimberly mill. After the awards were made, the group was shown a motion picture, "The Effects of Alcohol on Automotive Driving."

The department, the garage of the mill, has worked a total of 4,769 days without a lost-time accident.

S. F. Shattuck Addresses Students

S. F. Shattuck, retired vice president in charge of industrial relations at Kimberly-Clark Corporation, addressed the Menasha High School student body and faculty on "Principles of Life" last week. His talk was the first of a series sponsored by the Conservation Club at the school.

Marathon Pressmen Get 15% Wage Increase

Pressroom employes of Marathon Corporation, Menasha, Wis., received a general wage increase of 15 cents an hour, effective January 5, W. E. Strong of the department of industrial relations, announced last week. The increase was agreed to January 7 at a meeting of company officials, committees representing Menasha Local 298 and Wausau Local 370 of the International Printing Pressman's and Assistant's Union, and Clem Newcomb, international representative of the union.

Ask Federal Forest Research Aid

A federal appropriation of $50,000 in the 1947 agriculture appropriation bill for the establishment of a forest research center in northern Wisconsin is asked in a resolution adopted January 23 by the Wisconsin Forest Research Committee, at a meeting at Wausau, Wis.

The resolution stated that the center was essential to Wisconsin forest research work and explained that if it was established studies, tests and developments could be made for land-owners who have soil suitable only for growing trees.

MIDWEST REPORTS HEAVY DEMAND

(Continued from page 8)

been made to finance the bonus payments which are expected to set a maximum of $500 and necessitate the raising of $400,000,000 to pay off the entire amount. The three proposals, of interest to both Illinois and out-of-state paper firms doing business in Illinois are (1) an income tax which is construed as not too possible for constitutional reasons, (2) an excise on industry which many feel would cripple industry and (3) a sales tax possibly at the 3% rate. Consensus of opinion is that the latter proposal would be the most popular and most easily approved. Chief opposition would be expected from labor ranks where sales taxes have always been construed as "inequitable".

Interest Growing in Packaging Papers

Chicago sources report considerable interest in the development of packaging papers which is now going on in the mills of the Nekoosa-Edwards Paper Company. A new research laboratory, especially fitted for work in the food packaging and special industrial papers field, is getting a lot of favorable comment here. Equipment is being added to make the project one that fully utilizes the knowledge developed by the company during the war period.

Heads Masonite Corporation

Eugene Holland, formerly president of the Florence Stove Company, has been elected president and a director of the Masonite Corporation. The election, held this week by the board of directors, places Mr. Holland in office as of February 1. Mr. Holland succeeds M. P. McCullough, one of the founders, who will retire but will continue to serve on the board and as chairman of the executive committee.

File with SEC

Local financial circles reported this week action of the Carpenter Paper Company of Omaha, in registering with the SEC, 15,000 shares of $100 par value 4 per cent convertible preferred stock and 25,900 shares of one dollar common. The same sources also credited the Mead Corporation with the registration with SEC of $7000 shares of $5.50 cumulative preferred stock, series B with warrants for the purchase of common stock—series of 1937—and 14,000 shares of no-par value common.

Poole Returns to Container Corporation

W. J. Poole has resumed his duties with the Container Corporation of America following nearly four years of service with the United States Marine Corps. He will handle the Container line of locker plant and home freezer containers and cabinets and thus carry on an extension of his previous work in the sales research department of the company. At that time Mr. Poole did extensive research on frozen and dehydrated foods, including package research for the proper handling and shipping of military field rations.

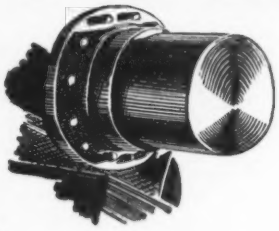
New Paper Products Co. Formed

INDIANAPOLIS, Ind., January 28, 1946—Articles of incorporation have been filed with the Indiana secretary of state by the K-W Manufacturing Corporation, 208 South Fourth street, Lafayette, Ind., formed to manufacture paper products. The corporation has 5,000 shares of capital stock valued at $10 a share and the incorporators are Carl H. Kreidler, Hugh Williams, Marvin DeWald and Edward B. Raub Jr.

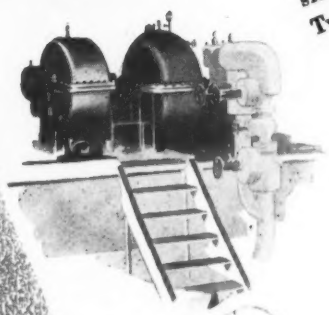
FOR EVERY SERVICE CONDITION . . .

You can count on

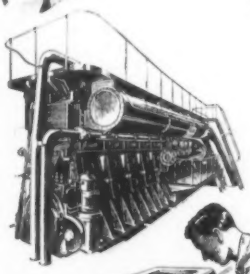
TYCOL "ENGINEERED LUBRICATION"



EXTREME PRESSURE GREASE—"Never a single bearing failure since we changed to Tycol E.P. Grease."



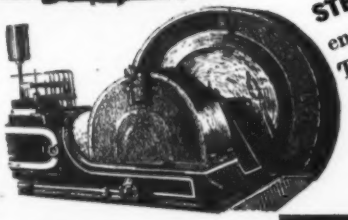
TURBINE OIL—"70,000 hours continuous operation . . . oil still in excellent condition."



DIESEL OIL—"No more trouble with Sticking Valves . . . costly delays and overhauls eliminated . . . engines giving better service . . ."

NO-RUST-OLS—Prevent rust formations on machines—small parts prior to assembly—and finished products. Usable at all temperatures by spraying, brushing, swabing or dipping.

STEAM CYLINDER OIL—"We saved 33⅓% engine lubrication costs when we changed to Tycol Cylinder Oil."



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TYCOL

TIDE WATER ASSOCIATED OIL COMPANY

17 BATTERY PLACE · NEW YORK 4, N. Y.

Kutter Retires as Black-Clawson Pres.

MIDDLETOWN, Ohio, February 4, 1946—Retiring this week as president of the Black-Clawson Company Herman L. Kutter is rounding out a varied career in the paper industry, covering a period of major changes, many of which he helped to bring about. Completing fifty years service with Black-Clawson alone Mr. Kutter's career is typically that of American tradition of selfmade men.

Entering paper making at an early age he was a qualified paper maker when he came to America at the age of 19. He is credited with being the first man to successfully put a sheet of paper over a Yankee machine in this country.

He became associated with the Black-Clawson Company in 1896 as an engineering draftsman and advanced rapidly into sales, retaining his flair for engineering perfection. In 1911 he became Secretary; in 1923 General Manager and in 1930 President of the company.

H. D. Martindale of Middletown, who has been vice-president, succeeds Mr. Kutter as president.

Mr. Martindale's appointment to head Black-Clawson has been preceded by 45 years of experience in industry. Since 1926 he has served in dual positions as vice-president of Black-Clawson and as general manager of Shartle Brothers Machine Co., a Black-Clawson subsidiary at Middletown, Ohio.

Apart from his duties with the firms with which he is associated Mr. Martindale has devoted much time to serving on government advisory boards, dating back to service for NRA. During the recent war period he was on the WLB Advisory Board, and he is at present one of the machinery industry leaders assisting the OPA in dealing with difficult war-peace transition problems. His interests extend into active wide participation in civic and social affairs in his home city.

Other organizational changes which came out of the Black-Clawson meeting were the naming of L. O. Kiehborth from secretary to be secretary-treasurer, and appointment of R. L. Kutter as assistant to the president. Other officers, including Allan Hyer, Adam E. Bridge, Cliff R. Crawford and John D. Haskell, all vice presidents, were reelected, as were the directors of the company.

Mengel to Add Another Plant

FULTON, N. Y., February 1, 1946—A new paper industry, the Mengel Company of Louisville, Ky., has selected Fulton as the site of a new plant, it was revealed Wednesday morning by Robert F. Smith, president of the Fulton Chamber of Commerce. Announcement of the new industry coming to the city was made by Smith along with the release of a letter received from Dulaney Logan, vice-president and manager of the corrugated container division of the company.

Smith said the Fulton plant is expected to be constructed this year. He said that while the company makes a variety of wood products, the new Fulton plant would manufacture only corrugated paper boxes. Other Mengel plants making these boxes are now located at Winston-Salem, N. C. and New Brunswick, N. J.

New Bulletin Explains Rotameter

In language for the layman, Fischer and Porter Company, Hatboro, Pa., has recently published a new eight-page composite bulletin. It opens with an easily understood explanation of Rotameter advantages and goes on to cover the most prominent styles of Rotameters and their uses. Among the many subjects included are details of the master enclosed Rotameter for normal pressures and temperatures; the armored Rotameter for high pressures and temperatures; meters for recording, controlling and totalizing rates of flow; meters for very low flows and those for extremely large flows; laboratory Rotameters and others. Profusely illustrated, the bulletin also contains two valuable pages of engineering recommendations.

Aerotec Shows Three New Switches

The Aerotec Company of White Plains, N. Y. has developed three new, 8-oz. switches for either pressure or vacuum up to 200 lbs., in the control of liquids or gases that will not corrode brass. Typical applications are to control compressors, pumps, carbonated beverage equipment. It is rated at 10 amp. on 110-volt ac., is available in three designs. Type M-500 has an externally adjustable range with a fixed differential. Type M-600 can be reset manually from the outside. Type M-700 has an adjustable differential. Contact arrangement in the first two can be specified as normally-closed, normally-open, or double throw. The third design is available only with normally-open contacts. Pressure connection is by means of a ⅛-in. pipe nipple.

Ward Catalogs Things to Come

PHILADELPHIA, Pa., January 21, 1946—D. L. Ward Company has just issued the Catalog Of Things To Come, a most ambitious advertising campaign, especially designed to help sell more printing. Presentation to the trade was made at a series of elaborate dinner meetings—two in Philadelphia and one each at York, Reading, Allentown, Pa., and Wilmington, Del.—when the catalog was explained by John D. Williams, sales manager, using 30 x 40 inch enlargements of the various pages under discussion.

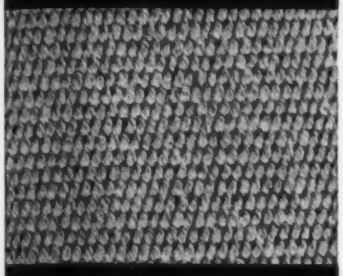
Miller Sells for Wood Machinery

PLAINFIELD, N. J., January 28, 1946—Anthony H. Miller has been transferred to the eastern sales engineering staff of the Wood Newspaper Machinery Corporation, with headquarters at the company's executive offices, 501 Fifth Ave., New York City. Mr. Miller joined the Wood Company in 1943 and until the cessation of hostilities handled the expediting of important war work being done by the Wood Company.

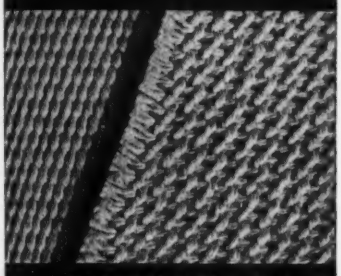
Package Machinery in the South

SPRINGFIELD, Mass., January 14, 1946—Package Machinery corporation has opened its first branch office in the south at Atlanta, Ga. The Atlanta office will cover the territory from Virginia west to the Mississippi. Thomas Jefferson, Jr., heads the branch office. He is the son of the late Thomas Jefferson, former president of the company, and has been affiliated with Package since July, 1933.

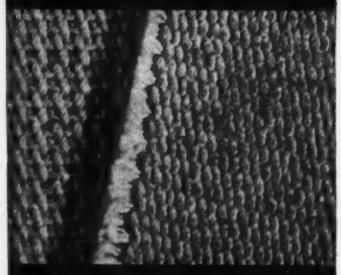
BRANDON



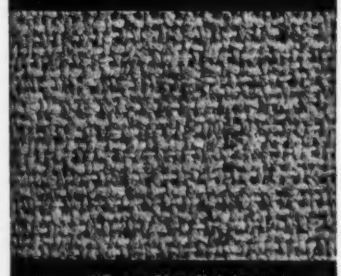
"Triumph" 3 ply 50-54 oz. Cotton



"Zephyr" 3 ply 45 oz. Cotton



"Zephyr" Cotton Asbestos



"Scapa Hall" Asbestos

Brandon Corporation

GREENVILLE, S. C.

Fitchburg Duck Mills

FITCHBURG, MASS.

manufacturers of

FINE DRYER FELTS

are now combined under one ownership and management

Created to give you greater Service, Research and Development in every Dryer Felt application.

Special weaves are available in both Cotton and Asbestos Felts to improve the quality of your finish and quantity of production.

Quick service from over 30 felt looms and convenient plant locations at Fitchburg, Mass. and Greenville, S. C. . . . ready to work with you.

REPRESENTATIVES

Stedman Paper Company
Holyoke, Massachusetts

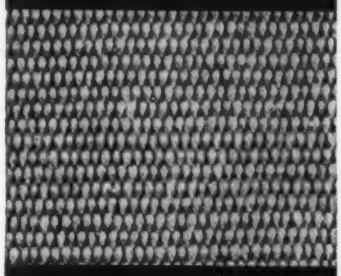
Jack E. Johnson
Oswego, Oregon

Corwin J. Jewell
Watertown, New York

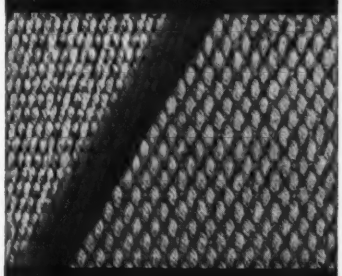
Industrial Supplies Corp.
Appleton, Wisconsin

The Christian Company
Richmond, Virginia

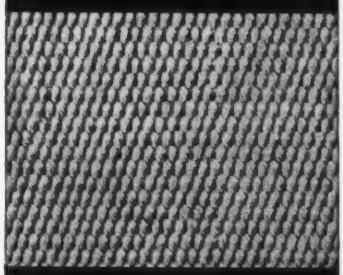
FITCHBURG



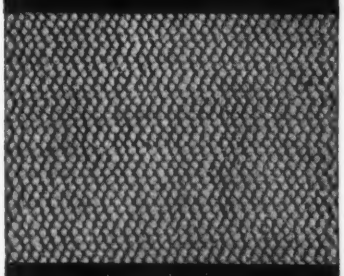
"Triune" 3 ply 52 oz. Cotton



"Diamond Back" 2 ply 46 oz. Cotton



"Multiple Weave" 2 ply 52 oz. Cotton



"Baker" 4 ply 48 oz. Cotton

BRANDON
DRYER FELTS

Morey Paper Mill Supply Co.

309 SOUTH ST., FITCHBURG, MASSACHUSETTS

Sole Distributors for

WOODWARD, BALDWIN & CO., BALTIMORE, MD.

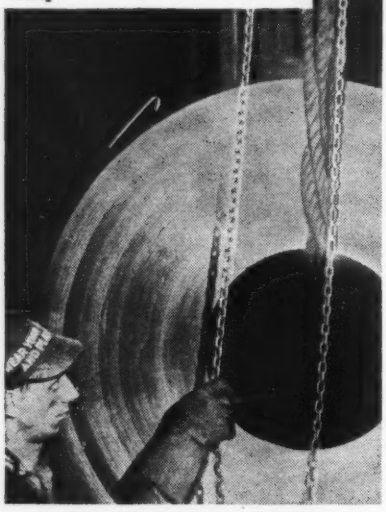
FITCHBURG DUCK MILLS
ESTABLISHED 1844
DRYER FELTS

LET READING HOISTS
HANDLE WITH CARE
... AT LESS COST!

● In your plant, unsafe handling of easily-damaged materials can often result in higher manufacturing costs and lower product quality.

Reading Multiple Gear Chain Hoists position your materials with the highest degree of money-saving safety and accuracy. Sturdy maple brake wheel inserts hold any load from ¼ ton to 25 tons snugly against the friction disc until the load is to be moved. Maximum lifting power plus a safe, constant-speed lowering motion have given Reading Hoists wide user acceptance for the past 40 years.

Assure yourself of these and many more advantages—see your distributor or write us direct, today.



READING CHAIN & BLOCK CORPORATION
2113 ADAMS ST., READING, PA.
CHAIN HOISTS ● ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

READING HOISTS

Johnston Heads Ralston Sales

NIAGARA FALLS, N. Y., February 1, 1946—John D. Johnston, widely known paper and packaging expert, named a member of the board of directors of W. Ralston and Company, Inc., will serve as general sales manager of the waterproof paper manufacturing concern according to an announcement made early this week by George W. Chadwick, vice-president and general manager of the company. "Mr. Johnston," said Mr. Chadwick, "will direct the activities of our New York sales office at 220 East 42nd Street, making frequent trips between that point and both our Niagara Falls and Old Bridge, N. J. plants to foster an even greater co-operation between our sales department and research laboratories with particular emphasis on expanding our present services in both the manufacture and eventual use of waterproof papers."

Mr. Johnston, who served as a member of the advisory committee of the Kraft Paper Manufacturers under Norbet A. McKenna, chief of the paper section of O.P.M., later known as W.P.B., brings a vast knowledge of the wrapping paper and packaging field to his new position. He has directed sales representation for the Bogalusa Paper Company which merged with Robert Gaylord in July 1937 to form the Gaylord Container Corporation and for the past four years has been eastern sales manager of their mill division.

He is a past president of the Salesmen's Association of the Paper Industry and was one of the charter members of the Paper Club of New York. He also served on its first board of governors.

Castle & Overton Elects

At the annual meeting of the Directors of Castle & Overton, Inc., 630 Fifth Avenue, held on January 31st, the following officers were elected:

Chairman of the Board, George W. Oliphant; President, Carlton B. Overton; Senior Vice-President, Johannes Westergaard; Vice-President, Abner Koplik; Vice-President In Charge of Secondary Materials, Perry H. Koplik; Secretary, Arthur E. Oliphant; Treasurer, Carlton B. Overton.

At the meeting of the stockholders, held immediately preceding the directors' meeting, the following were continued in office:

George W. Oliphant, Carlton B. Overton, Abner Koplik, Johannes Westergaard, Clifford D. Castle.

Goodrich in New York

CLEVELAND, Ohio — Establishment of New York City offices by B. F. Goodrich Chemical Company in the French Building, 45th Street at Fifth Avenue, and appointment of a staff is announced by W. S. Richardson, president. The offices will enable the company to serve its customers more efficiently in the eastern territory.

Personnel of the new offices are: O. E. Isenberg and R. F. Dettelbach, sales representatives for Geon polyvinyl materials, Jack H. Rines, Philadelphia reclaimed rubber sales, Roger Bascom, Hycar synthetic rubber sales, Miss Ruth Depner, chief clerk and Miss L. M. Tocaben, service clerk.

Location of a new Chicago office in Room 1119, Field Building, is also announced. Clyde Segner, handling Geon sales in that area, is in charge.

Hall Recovers from Fall

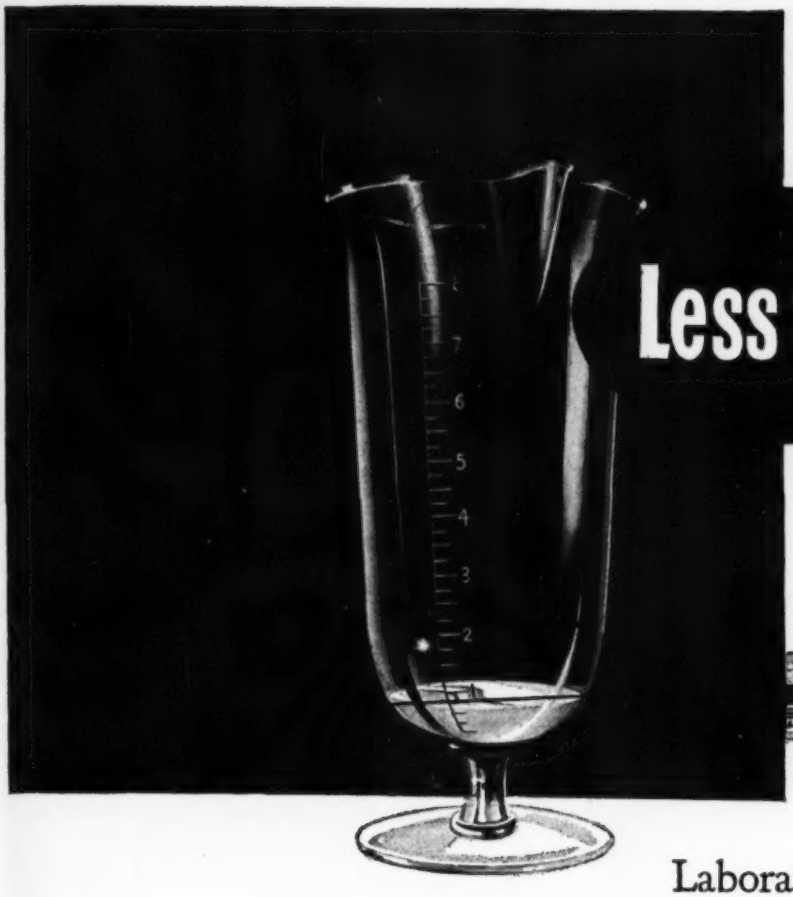
FITCHBURG, Mass., January 28, 1946—G. Bancroft Hall, salesman for the Morey Paper Mill Supply Company and squadron leader of the Air Scouts, is in "good" condition at Burbank hospital, where he was taken following a fall from the front steps of his home, 45 Beacon street suffering a compressed fracture of the vertebrae. Mr. Hall was injured when he slipped from an icy top step and plummeted down the front stairway. Examination of X-rays by a Boston specialist indicates the break is not as bad as at first expected, and that Mr. Hall will be out in a matter of a few weeks.

Eggerss Advanced

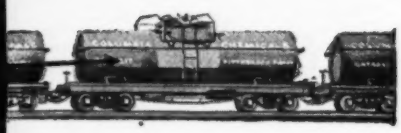
Hans A. Eggerss was elected executive vice-president of Continental Can Company, Inc. at a meeting of the executive committee of the board of directors held Friday. Mr. Eggerss is a director of Continental Can Company and has been vice president in charge of paper and plastics. He is also president of The Container Company, a subsidiary. In 1924 he formed and became president of the Container Company which was later acquired by Continental.

Hooker Promotes Bovier

NIAGARA FALLS, N. Y., January 28, 1946—The Hooker Electrochemical Company has recently assigned Lloyd S. Bovier to the sales development department with headquarters at Niagara Falls. Mr. Bovier, formerly sales representative in the central states, will devote himself to field work in the application of new Hooker chemicals to industry.



Less than 1 oz. in 40 tons



Laboratory perfection in large-scale production of **CAUSTIC SODA**

The manufacture of numerous products requires Caustic Soda of utmost "purity"—that is with its metallic content, such as copper or iron, rigidly controlled. In the production of high-strength textiles, for example, the presence of as much as one ounce of these impurities in 40 tons of caustic may result in an inferior product!

Caustic Soda readily picks up such metals, however. To prevent contamination is relatively simple in the laboratory—but production on the vast scale required to meet huge industrial needs necessitates ingenious methods and infinite care in processing and handling.

The achievements in meeting exacting industrial standards—including the patented purification process for producing high grade diaphragm electrolytic Caustic Soda—are characteristic of Columbia operations. They are important reasons for entrusting your requirements for alkalies and related products to Columbia.

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY • COLUMBIA CHEMICAL DIVISION

FIFTH AVENUE at BELLEFIELD • PITTSBURGH 13, PENNSYLVANIA

Chicago • Boston • St. Louis • Pittsburgh • New York • Cincinnati • Cleveland • Philadelphia • Minneapolis • Charlotte • San Francisco

COLUMBIA ESSENTIAL INDUSTRIAL CHEMICALS

Soda Ash • Caustic Soda • Sodium Bicarbonate • Liquid Chlorine • Silene EF (Hydrated Calcium Silicate) • Calcium Chloride • Soda Briquettes
Modified Sodas • Caustic Ash • Phosflake • Calcene T (Precipitated Calcium Carbonate) • Pittchlor (Calcium Hypochlorite)

Taylor Shifts Sales Territories

ROCHESTER, N. Y., January 19, 1946 — Taylor Instrument Companies have made important changes in the personnel of the sales organization to take effect immediately. J. E. Hart, formerly of the Taylor organization at Rochester and for the past two years deputy chief of the Industrial Instrument Branch of the War Production Board, has returned to this organization. His new assignment is as manager of the Boston sales office covering the New England territory.

R. E. Flikkema, for twenty years manager of the Pittsburgh office, was transferred to Tulsa to take charge of that branch. With him is A. R. Wagner who joined Taylor in the Spring and who has had considerable experience in the oil industry throughout the Southwest. F. C. Fuzzard, who worked with Flikkema several years, has been made acting manager of the Pittsburgh territory. A. C. Mahana, of Rochester, is assisting Mr. Fuzzard in that territory. J. A. Grant, who started in the Philadelphia office nearly ten years ago and was later in charge of sales activities centered in Greenville, N. C., has returned to Philadelphia to be part of that sales organization. His return to this organization follows three years service with the U. S. Navy with the rank of Lt. Comdr.

Hardinge Adds Filter Line

Manufacturing and sale of a new type Automatic Backwash Rapid Sand Filter has been taken over by the Hardinge Company Incorporated, York, Penn. This filter was developed since 1940 by W. C. Laughlin, and installations of it have been made in three paper manufacturing plants. The three plants which are now using the filter are: Castanea Paper Company, Johnsonbury, Penn. and The Robert Gair Company plants at Bogota, N. J. and Piermont, N. Y. In these plants the filter is handling paper mill waste water or excess white water. The fibre and filler is being recovered and reused, while the water is sufficiently free of suspended matter for reuse on showers.

The Hardinge sand filter consists of a specially compartmented sand bed with underdrains, together with a suitable backwash and cleaning mechanism traveling on tracks on the sidewalls of the filter tank, and actuated electrically at predetermined differences in head. The filter can be supplied in sizes varying from 3 ft. to 16 ft. in width and lengths up to 100 feet.

McClane Returns to Hercules

WILMINGTON, Del., January 17, 1946—J. Huston McClane has been appointed manager of the Atlanta, sales office of Hercules Powder Company's Paper Makers Chemical Department. Mr. McClane, who returns to civilian status this month after serving as a major with the Army overseas, will supervise sales of alum and other PMC Department chemicals in the southeastern states.

A member of the Hercules PMC Department since 1939, Mr. McClane was first employed in the Atlanta office as a technical service representative specializing in alum. In July, 1940, he transferred to the department's Kalamazoo, Mich., office where he was engaged in technical service among the paper mills in the middle west. He left Kalamazoo in May, 1942, to enter the Army.

Worthington Threat Averted

HOLYOKE, Mass., January 29, 1946—The threatened strike at the Worthington Pump and Machinery corporation plant scheduled to begin at one minute after midnight last Monday was averted at a mass meeting of 500 union workers Saturday when a new proposal offered by the union's executive committee was accepted. It was reported that only two dissenting voices were heard against the acceptance of the new agreement.

The proposal is to employes on so-called nonincentive work, an increase of eight cents an hour, retroactive to January 1 and incentive workers (those who receive bonuses) will receive an eight-cent increase, on a 75-unit hour. To every worker in the plant will be paid $100 for vacations and bonuses. One of the features of the new proposal was that it contains a reopening clause, as of May 15, if there is a difference between present policy and the national wage policy at that time. The union had asked for a $2-a-day increase.

Huyck Honors Staff Members

ALBANY, N. Y., January 21, 1946—To honor more than 500 men and women who have been with the organization for periods of from ten to fifty years, F. C. Huyck & Sons recently held two special dinner meetings in the company's assembly auditorium. At the same time the company, well-known manufacturer of paper-makers' felts, observed its own 75th anniversary. To the first dinner meeting were invited all who had been with the Company twenty-five years or more. Three of these—Francis E. Crandall, Katherine A. Howard, and John J. Ruff—have records of more than 50 years of service. A second dinner meeting was held for a still larger group, numbering more than three hundred, who have completed over ten but less than twenty-five years of service.

Pennsalt Names McWhirter

PHILADELPHIA, Pa., January 28, 1946—Leonard T. Beale, President of the Pennsylvania Salt Manufacturing Company, has appointed James McWhirter, 36, as superintendent of Pennsalt's Natrona plant. Mr. McWhirter, who succeeds Charles G. Boone, retired, came to Pennsalt last summer after eight years experience in the heavy chemical industry. Before joining Pennsalt in Philadelphia he had been superintendent of plants in Detroit and Cleveland for the General Chemical Company.

A native of Scotland, Mr. McWhirter came to this country when he was three. He earned his B. S. in chemistry at Middleburg College and M. S. in chemistry at New York University.

Ansul Advances Johnson

MARINETTE, Wis., January 21, 1946—Clarence L. Johnson, a member of the sales staff at the Dugas office at Chicago for Ansul Chemical Company, was appointed manager of that office effective January 1. He succeeds Floyd M. Duvall who has been transferred to Indianapolis where he will be district manager of refrigeration sales. Before joining the Ansul organization, Johnson was safety supervisor for Sherwin-Williams Company and prior to that was engaged in similar work for La Salle Steel Company and Republic Steel Corporation. He is a native of Chicago and attended Northwestern University and Illinois Institute of Technology.

CPPA Studies Sulphite Pulp Cleanliness

The Technical Section of the Canadian Pulp and Paper Association, has just released a book entitled "Factors Contributing to Sulphite Pulp Cleanliness." This report is the result of four years of intensive and integrated study by the Sulphite Committee of this organization. During this period, three comprehensive questionnaires were sent out to the Sulphite mills in order to obtain as much practical operating data as possible on the subject.

The volume is divided into three main sections. The first section bears the title "Control of Dirt in Sulphite Pulp as Practiced in Canadian and Newfoundland Mills." This section deals with the factors affecting sulphite pulp cleanliness, including wood handling and preparation, acid-making, cooking, washing and screening as well as pipe line material, slime control, etc. Data and comments from 35 Canadian and Newfoundland sulphite mills are reported in detail. Samples of pulp were obtained and these were tested for bleachability and dirt counts in the laboratory of the Pulp and Paper Research Institute of Canada. These latter data serve to explain and correlate the information obtained from the mills. Flow sheets showing the screen room stock and water flow of the different mills are included in this section.

The title of the second section is "Sulphite Flat Screen Operation." This section is based on the replies to a questionnaire which was answered by 22 mills and 7 manufacturers of flat screens and flat screen accessories. These replies are reported and tabulated in detail. The information covered includes, design of flat screens and screen plates, arrangement of screens, operating details, maintenance, power consumption, etc. The data is summed up and, in so far as possible, conclusions have been drawn. Several illustrations are included in this section, as well as a bibliography of articles on flat screen operation for the past twenty years.

The last section of the book is called "Sulphite Woodroom Equipment Practice." It deals with the cleaning and preparation of wood for use in the sulphite digester house. Barkers, rossers, knot saws, knot borers, woodpeckers, chippers and chip screens are studied and reported on, the original data having been supplied by 39 mills. Details of capacity, efficiency, power consumption, operating conditions, etc., are reported for each piece of equipment and again where possible, conclusions are drawn. There are four appendices to this section.

Appendix I "Wood Cleaning Versus Pulp Cleanliness" by T. R. Moore—This is a report of experimental work in which the effect of wood cleaning on pulp cleanliness was studied.

Appendix II "The Waterous Friction Log Barker" by Alex Murray—a report on the operation of this equipment.

Appendix III "The Allis-Chalmers Streambarker" by C. G. Southmayd—a report on this barker from the manufacturers.

Appendix IV "The Ingersoll Rand Hydraulic Barker"—A progress report from the above manufacturer.

A limited number of copies of this report is available to non-members of this organization at $5.00 per copy in Canada and the United States. The price is $6.00 per copy elsewhere. Requests for these may be addressed to the Technical Section, Canadian Pulp and Paper Association, 3420 University Street, Montreal 2, P. Q.

New Type Rotating Water Joint

The Deublin Union, a new type rotating water joint, for cooling revolving shafts, cylinders, or drums, has been announced by the Deublin Company of Northbrook, Illinois. The union will also efficiently handle liquids for heating up to 200 degrees F.

Leakproof, corrosion proof, frictionless, and more sturdy, the Deublin Union utilizes a helical groove on the rotor which runs counter to the direction of rotation. The sweeping action of the helix prevents leakage between the shaft and housing as well as keeping foreign objects from lodging between the two surfaces. Precision machining leaves maximum clearance between the shaft and housing of .0005". Rotor concentricity is held to .001" total indicator reading.

Rotor is machined of stainless steel which provides over three times the tensile strength of cast shafts. Housing is of bronze. Both rotor and housing resist the corrosive action of water, brine, and other similar liquids that may be used for cooling or heating.

Standard, sealed, "lubricated-for-life" ball bearing provides almost frictionless freedom of movement. Wobble is eliminated by special tooling of threads which are concentric in relation to bearing surfaces.

The Deublin Union is made in two types: Monoflow and Duoflow. Four standard sizes are available in both types, but because of the basic design of the union, any size can be manufactured from ¼" pipe size to 6".

Deny Casein Price Increase

WASHINGTON, D. C., February 6, 1946—No increase in the present ceiling price of casein is warranted on the basis of information submitted by the Casein Importers' Association and the domestic producers and handlers of this commodity, the Office of Price Administration said today. Today's announcement is made to permit constructive planning by producers, manufacturers, importers and users of casein, OPA said. Casein—a skim-milk product—is used mainly in the manufacture of paper and adhesive products.

In view of increased milk production and a very large shift from the delivery of farm separated milk to whole milk that occurred during the past five years, it is apparent that the amount of skim milk for manufacturing purposes in the United States will be at near-record levels, OPA said. More than half the skim milk has been used for non-fat dry milk solid. With the decline in war demands for this product it is anticipated that more skim milk will be diverted to domestic casein production in 1946.

Hurlbut Sends Burt to School

LEE, Mass., February 4, 1946—Capt. James M. Burt of South Lee, winner of the Congressional Medal of Honor, has ended his terminal leave and has been promoted to major in the inactive reserve. At present he is being sent to a school in New York by his employer, the Hurlbut Paper company, for further training in chemistry used in paper making.

AWP Has Slight Fire

HOLYOKE, Mass., February 4, 1946—Only slight damage was reported in a flash fire in the American Writing Paper Corporation laboratory. A leak in an acetylene torch caused the blaze.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
W. L. Cook, Editor

THIRTY YEARS OF PRODUCTION

For more than half a century the paper industry has steadily expanded its production. This consistently rising record is a notable one. The relatively high output in periods of depressed business activity as well as in years of greatest business volume, is indicative of the great stability of this industry, based upon the essential nature of its products which in turn rate at a high per capita consumption. The charted trend of total paper and paperboard production from 1899 through 1945, from data compiled by the Bureau of the Census as recently issued by the American Paper and Pulp Association, shows this notable steady increase. The exceptions are the years of 1921, 1930, 1932, 1934, 1938 and the war years from 1942 through 1945.

In 1899, total production was 2,167,593 tons, consumption 2,167,593 tons, or a capita consumption of 57.9 pounds. In the period from 1899 to 1920, total production rose to 7,185,122 tons, consumption to 7,639,569 tons, or 144.5 pounds per capita. In the year 1921, total production declined to 5,333,397 tons, consumption to 6, 027,141 tons or 111.4 pounds per capita. Output rose again in 1922 to reach 11,-140,235 tons in 1929, when consumption reached 13,411,455 tons plus imports of 2,533,603 tons, less exports of 262,383 tons, consumption of 13,411,355 tons or 220.7 pounds per capita.

Declining paper production in the depressed years from 1930 through 1934 reached the lowest tonnage in 1932, when total output was 7,997,872 tons; imports, 1,848,016 tons; exports, 119,292 tons, and total consumption 9,726,596 tons or 155.6 pounds per capita. Mill operations rose in 1935 with a production of 10,479,095 tons; imports, 2,456,998 tons; exports, 178,370 tons, and consumption rose to 12,-757,723 tons or 200.1 pounds per capita. Higher production in successive years reached a high tonnage of 12,837,003 tons in 1937; imports 3,435,222 tons; exports, 232,361 tons, and consumption totaled 16,-039,864 tons or 248.2 pounds per capita. Production declined in 1938 to 11,380,814 tons; imports dropped to 2,702,952 tons; exports, 208,064 tons, and consumption, 13,530,227 tons or 207.8 pounds per capita.

Rising production in 1939 totaled 13,509,642 tons; imports, 2,702,952 tons; exports, 266,079 tons, and consumption rose to 15,946,515 tons or 243.5 pounds per capita. A high record output was attained in 1940 at 14,483,709 tons; imports, 2,826,880 tons; exports 578,248 tons, and consumption, 16,732,341 tons or 243.5 pounds per capita. The industry in 1941 set another record at 17,762,365 tons; when imports were 3,120,213 tons; exports, 464,390 tons, with the all-time high consumption record of 20,418,188 tons or 309.4 pounds per capita.

Production in 1942 declined to 17,083,862 tons: imports to 3,038,499 tons; exports to 341,920 tons, and consumption to 19,780,441 tons or 297.4 pounds per capita. Declining production also occurred in 1943 at 17,035,688 tons; imports, 2,762,429 tons; exports, 319,922 tons, and consumption to 19,478,195 tons or 287.3 pounds per capita. Production rose slightly in 1944 to 17,182,804 tons; imports were lower at 2,616,000 tons; as were exports at 312,917 tons, and consumption fell slightly to 19,485,887 tons or 286.6 pounds per capita. In 1945, production rose to 17,-374,208 tons; imports to 2,775,000 tons; exports to 326,755 tons, and consumption to 19,822,453 tons.

The trend of newsprint production from 1899 to 1945 indicates the most irregularity among major types of paper. Production in 1899 was 569,212 tons, consumption, 569,212 tons or 15.2 pounds per capita. In 1909 through 1932, production was above 1,000,000 tons but declined to 928,332 tons in 1933, when consumption was 2,710,725 tons or 43.1 pounds per capita. In 1940, production rose to 1,056,304 tons. Imports were 2,762,538 tons; exports, 43,916 tons, and consumption was 3,774,926 tons or 57.3 pounds per capita. This compares with an all-time high consumption record of 4,275,833 tons or 66.2 pounds per capita, in 1929, when production was 975,854 tons; imports, 3,317,024 tons and exports, 17,045 tons. Newsprint production continued high in 1941 at 1,043,999 tons; imports, 2,982,375 tons; exports, 70,265 tons, and consumption 3,956,109 tons or 59.9 pounds per capita. In 1942 through 1944, production declined to reach a production of 725,267 tons in 1945; imports, 2,650,000 tons; exports, 45,000 tons, and consumption, 3,330,267 tons.

Production of paperboard as indicated from these data shows a very progressive expansion. In 1899 production was 394,111 tons, consumption 394,111 tons or 10.5 pounds per capita. In 1923 production had increased to 2,792,832 tons; imports, 51,788 tons, exports, 40,066 tons, and consumption increased to 2,804,554 tons or 50.3 pounds per capita. In 1933, production was 4,076,290 tons; imports, 18,531 tons; exports, 46,851 tons, and consumption 4,048,070 tons or 64.4 pounds per capita. In 1944, the paperboard industry established an all-time high record at 8,962,568 tons; imports, 36,000 tons; exports, 82,018 tons, and consumption, 8,916,550 tons or 131.1 pounds per capita. In 1945 production totaled 8,905,-628 tons; imports, 36,000 tons; exports, 82,018 tons, and consumption, 8,859,610 tons or 126.9 pounds per capita.

Book paper production in 1899 was 304,459 tons, consumption, 304,459 tons or 8.1 pounds per capita. In 1941, the all-time record year, production was 2,025,891 tons; imports 28,506 tons; exports 51,752 tons and consumption 2,002,645 tons or 30.3 pounds per capita. In 1945 production was 1,494,436 tons; imports, 28,000 tons; exports, 38,467 tons, and consumption, 1,483,969 tons or 21.3 pounds per capita.

Calendar of Coming Events

February 25-28, 1946.—American Paper and Pulp Association. Annual Convention, Waldorf Astoria Hotel, New York.

February 25-28, 1946.—Technical Association of the Pulp and Paper Industry, Annual Convention, Commodore Hotel, New York.

February 28, 1946.—Waxed Paper Institute, Annual Meeting, Hotel Pennsylvania, New York.

April 1-3, 1946.—National Paper Trade Association, Annual Convention, Waldorf Astoria Hotel, New York.

June 17-20, 1946.—American Pulp and Paper Mill Superintendents Association, Annual Convention, Poland Spring, Me.

Tinker Comments on Paper Situation

In an interview on February 4, E. W. Tinker, executive secretary of the American Paper and Pulp association said: I note with interest some current statements urging that paper supplies be increased by easing present tariff rates. Paper supplies are being increased and, quite rapidly, by the production of this country. In so far as supplies are short the situation is directly traceable to government restrictions and war necessities.

Printing and publishing supplies of paper were severely restricted by the War Production Board in the interest of the prosecution of the war. Since the revocation of the control orders on October 1, U. S. production of these grades has literally jumped upward. New productive capacity is also being brought in this year to the extent of over a million tons annually. Even with its present capacity it is expected that the industry will produce a million tons more of paper and paperboard than it did in 1945.

Individuals who expect to get early relief by letting down our tariff rates should study the world picture. There is no tariff on newsprint and yet newsprint is in the tightest supply situation of all grades. This country has for years largely depended upon imports of newsprint principally from our friendly neighbor Canada. Yet newsprint consumption restrictions were required longer than restrictions on any other grade of paper.

With North America practically the only source of paper production available to the World Markets the demands upon our manufacturers are tremendous. Our papermaking industry is the only paper making industry in the world that in spite of war conditions was able to increase its production. This it did magnificently to the extent of 28½% of prewar production. It deserves appreciation rather than criticism. Our war experiences certainly should have taught customers of the paper industry that we must be self-sufficient in our production of paper.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
Dec. 22	96.5	Dec. 23	84.6
Dec. 29	60.8	Dec. 30	62.0
Jan. 5,'46	89.1	Jan. 6,'45	81.0
Jan. 12	95.3	Jan. 13	88.7
Jan. 19	94.4	Jan. 20	89.0
Jan. 26	94.5	Jan. 27	88.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	90.6	92.4	88.1
1945	86.7	89.4	90.2	88.1	89.8	91.2	80.8	88.6	90.2	95.9	95.5	91.0	89.7

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year Average	71.5	83.4	85.6	97.4	90.4	87.8	88.1	89.7

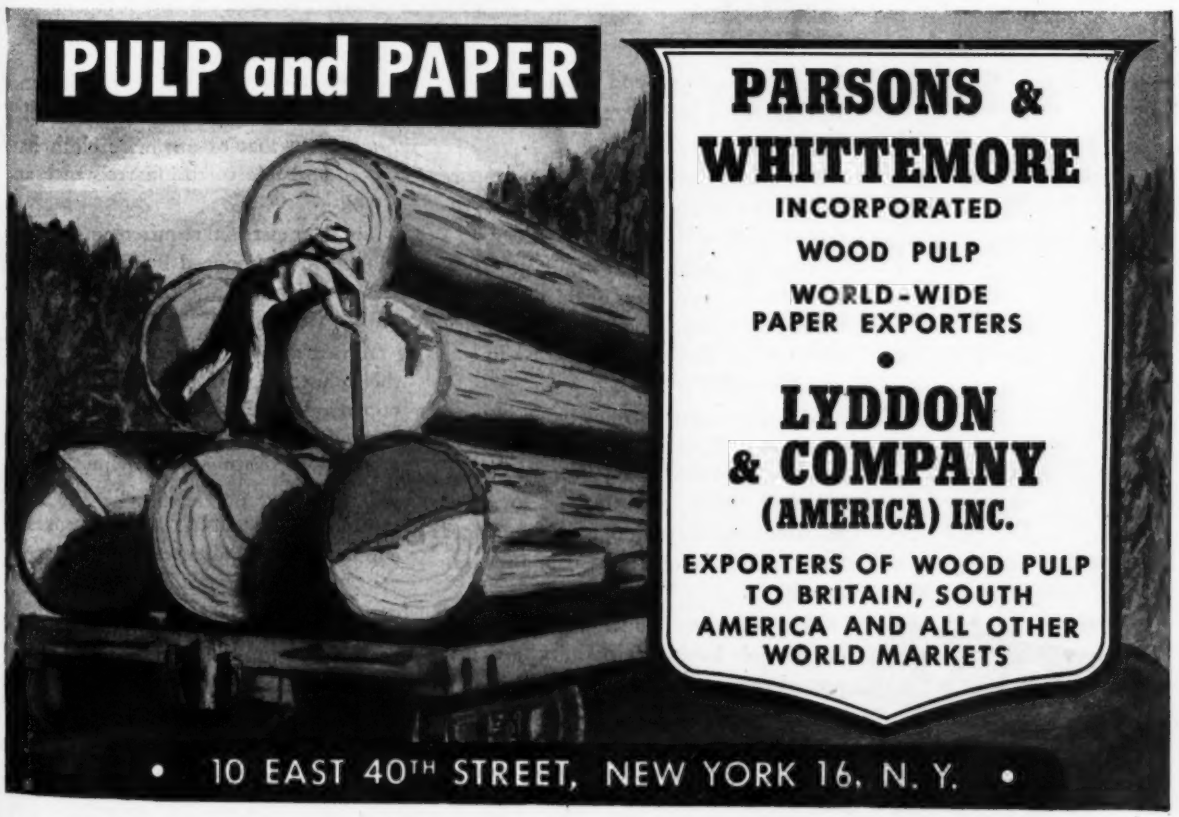
* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

Current Weeks—1945		Corresponding Weeks—1944	
Dec. 22	92	Dec. 23	94
Dec. 29	52	Dec. 30	57
Jan. 5,'46	75	Jan. 6,'45	80
Jan. 12	94	Jan. 13	95
Jan. 19	93	Jan. 20	94
Jan. 26	94	Jan. 27	95

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	85	96	92	95	95	85	93
1945	91	95	97	97	96	96	86	90	91	97	95	85	93

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.



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122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Instrumentation Studies. LIII*

Penetration of Papers by Water Vapor. VII.

Progress Report on the Further Development of a New Electric Dynamic Method for the Measurement of Water-Vapor Permeability

By The Staff of The Institute of Paper Chemistry

Abstract

This report presents further data on the evaluation of the water vapor permeability of sheet materials by a nongravimetric method employing an electric hygrometer and designated the dynamic method. *The effect of two variables on the dynamic results have been investigated; these were: (1) the moisture content of the sample and (2) the moisture-absorptive capacity of that portion of the specimen lying between the vapor barrier and the narrow space in which the hygrometer is located. A chart for the direct conversion of the dynamic data to permeability values has been developed.*

A nongravimetric method, designated the *dynamic method,* for evaluating the permeability of moisture-proof sheets was presented in Part VI of the current series of reports on water-vapor permeability *(1).* This method was by far the fastest of all known methods for obtaining water-vapor permeabilities and it was believed that, with certain limitations, it would be useful in *mill control testing.* Since the issuance of Part VI further studies have been made on the dynamic method, in which the following points have been investigated. (1) The effect of the initial moisture content of the test sheets on the data. (2) The possibility of correcting the data for the moisture-absorptive capacity of the material lying above the vapor barrier of the specimen. (3) The development of a chart for the simplification of the conversion of the data to permeability values.

The Dynamic Method

The dynamic method was described in considerable detail in Part VI *(1).* For the reader's convenience, a brief description of the method will be presented with the aid of the schematic drawing given in Fig. 1. The specimen *(s)* is sealed to the shallow vessel *(v)* with a wax ring one centimeter in height; this fixes the upper volume, and is sufficient to minimize variations in volume between the top of the specimen and the plate *(p)* to which the electric hygrometer *(h)* is mounted. (Such variations are caused by bulging and wrinkling of certain specimens.) The relative humidity within the vessel (r_1) is maintained with a saturated salt solution; the relative humidity outside the assembly (r_3) is that maintained at a constant value by a constant temperature, constant humidity room or cabinet. Prior to starting a test, a sealing grease is applied in the form of a continuous film on the upper edge of the wax ring. At zero time, the plate carrying the hygrometer unit *(h)* is placed over and sealed to the specimen assembly by a slight downward rotary motion. The relative humidity of the intermediate space (r_2) is subsequently measured with the hygrometer at various time intervals, depending upon the permeability of the specimen. A plot of the meter reading against time is made and the slope of the curve at a meter reading corresponding to a standard value of r_2 is established. By means of a chart, the actual permeability of the specimen is obtained.

For the work presented in this report, the relative humidity in the vessel was maintained at about 92% with a saturated solution of ammonium dihydrogen phosphate ($NH_4H_2PO_4$). The relative humidity r_3 was 50% and the temperature was 73° F. (the values maintained in a constant temperature, constant humidity room). The standard value selected for r_2 was a relative humidity of 53%, at which point the time rate of change of r_2 was established.

As was pointed out in Part VI, the hygrometer units exhibited a small fatigue phenomenon, which was circumvented by taking the meter readings after definite time intervals following the connection of the units into the circuit. This practice gave reproducible results. However, it has been found recently that the fatigue effect can be eliminated simply and entirely by reducing the a. c. supply voltage to a value in the neighborhood of 1 volt. This simple change adds to the convenience of operating the dynamic method.

Effect of Moisture Content

In previously reported work on the dynamic method, the data were obtained for two different conditions—one in which the gravimetric determination of the permeability of the specimen was determined prior to the dynamic measurement, and the other in which the dynamic measurement was made prior to the gravimetric determination. For the case in which the gravimetric determination was made first, the surfaces of the specimen had sufficient time to equilibrate with relative humidities of 50 and

* This report is one of a series issued as part of the Instrumentation Program of the American Paper and Pulp Association.
The data in this report were presented to the American Paper and Pulp Association on February 1, 1945, as Report No. 30, Part VII.

February 7, 1946

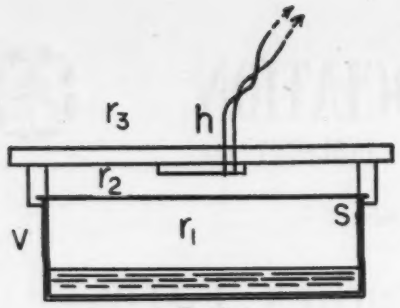

FIG. 1
Schematic Diagram of Dynamic Method

92%, and the dynamic test, therefore, was performed on specimens in which a constant rate of transpiration of moisture through the specimen had been established. For the second case, the procedure was reversed in the interest of performing dynamic measurements under conditions simulating those of mill control testing. The dynamic measurement was made first and was started 1 hour after the specimen was sealed to the crystallizing dish. This procedure left little time for the specimen to equilibrate with the two different relative humidity conditions and it was doubtful, in view of past experiences on some moistureproof materials, whether constant rates of moisture transpiration had been reached. Nevertheless, it was interesting to observe that, for this case, the correlation between the dynamic test and the permeability as established gravimetrically was very nearly as good as that obtained between the two methods in which the dynamic rates were obtained after constant rates of moisture transpiration were established. In other words, for the three types of moistureproof materials used, the early initial rate as established by the dynamic method during a relatively short time correlated favorably with that established gravimetrically over a period of time involving approximately a week. It should be recalled that, for the above study, the specimens were all conditioned to a relative humidity of 50% for a period of at least 24 hours prior to testing.

Since the chief application of the dynamic method should be in the rapid testing of moistureproof materials immediately after manufacture, the study was carried a step further to investigate the effects of the initial moisture content of the specimen on the rates measured by the dynamic method. An attempt was made to simulate the climatic conditions a sample would experience on being transferred from the machine to the testing laboratory of a mill. To accomplish this, a series of samples were preconditioned at widely different relative humidities prior to testing. Each sample was divided into three groups of specimens which were conditioned at relative humidities of 12 to 15, 50, and 85%. Since the preparation of the test specimens and the actual testing were carried out in a constant temperature, constant humidity room where the temperature was maintained at 73° F. and the relative humidity at 50%, a time schedule was set up for the testing of the two groups of samples preconditioned at the low and high relative humidities. This schedule consisted of (1) a 15-minute conditioning period in the humidity room at a relative humidity of 50% before the specimen was sealed to the crystallizing dish and (2) a 1-hour period between the time the specimen was sealed to the crystallizing dish and the time the dynamic test was started. The second phase of this schedule was also applied to the group of samples preconditioned at 50% relative humidity. After completing the dynamic tests, the gravimetric determinations of the water-vapor permeability (of the same specimens) were made.

Three types of moistureproof papers were used in carrying out the foregoing study—namely, asphalt laminated kraft papers, coated glassines, and coated cellophanes. The results are presented in Table I, where the first column gives the specimen number; the second, the value of the relative humidity at which the specimens were preconditioned; the third, the permeability in units of grams per 100 square inches per twenty-four hours [g./(100 sq. in. × 24 hours.)], as determined by the gravimetric method; and the last, the dynamic results in μa/min. at the standardized value of the relative humidity ($r_2 = 0.53$). These results are also presented in Figs. 2, 3, and 4.

On examining the data presented for the coated cellophane and glassine samples (shown respectively

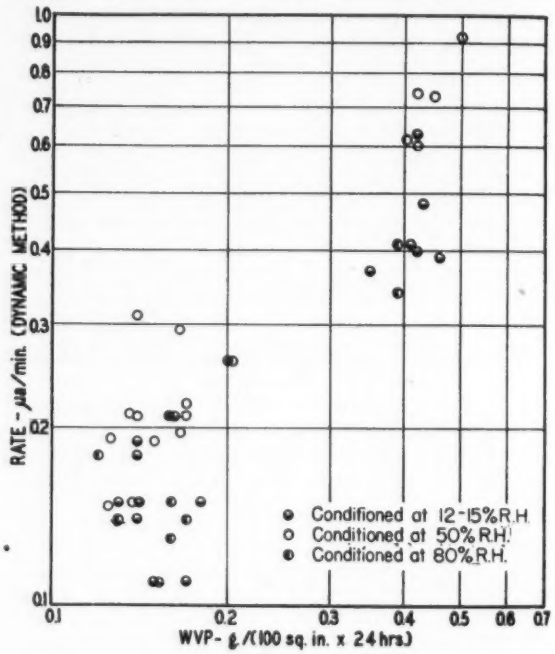

FIG. 2
Correlation of Rate of Rise of Hygrometer Current and Water Vapor Permeability Kraft Duplex Papers

in Figs. 3 and 4), it is observed that the dynamic results for the specimens preconditioned at 12 to 15% relative humidity tend to be in agreement with those obtained for the specimens preconditioned at 50% relative humidity, whereas those obtained for the specimens conditioned at 85% relative humidity are high and show the greatest dependence upon the moisture content of the specimen. Nevertheless, if consideration is given only to the points obtained for the specimens preconditioned at 85% relative humidity, it is observed that a fair correlation exists between the dynamic and the gravimetric methods. This correlation is particularly evident for the cellophane samples and is strongly indicated by the data for the glassine samples, where an unfortunate clustering of points limits a correlation of the data to a relatively small permeability range.

In considering the data for the kraft duplex pa-

pers shown in Fig. 2, a scattering of points is observed. Points obtained for the specimens conditioned at 85% relative humidity fall among those obtained for the specimens conditioned at 12 to 15% relative humidity, which indicates little or no dependence of the dynamic results on the moisture content of the specimen. However, it is believed that the severe scattering of the points is caused by factors associated with the mass of moisture-absorbing material of the specimen lying between the moistureproof barrier and the narrow space to which the hygrometer unit is exposed. This point will be considered in the following section.

Effect of Absorptive Material Above the Barrier

A factor governing the initial rate of increase of the relative humidity in the space above the specimen is the mass of the portion of the specimen lying above the moisture-resistant barrier. It will be recalled that, as the water vapor passes through the moisture-resistant barrier into the space above the specimen, the rate of increase of the relative humidity r_2 depends on (1) the permeability of the specimen, (2) the volume of the space above the specimen, and (3) the mass and the moisture-absorptive characteristics of the material lying above the moisture-resistant barrier. Variation of the rate of increase of the relative humidity r_2 depends only upon the permeability of the specimen if the space in which r_2 is being measured has constant volume and is entirely free of moisture-absorptive materials. However, this condition is infrequently found in the testing of actual moistureproof sheeting.

When a specimen such as a duplex moistureproof sheet is under dynamic test, the rate of increase of the

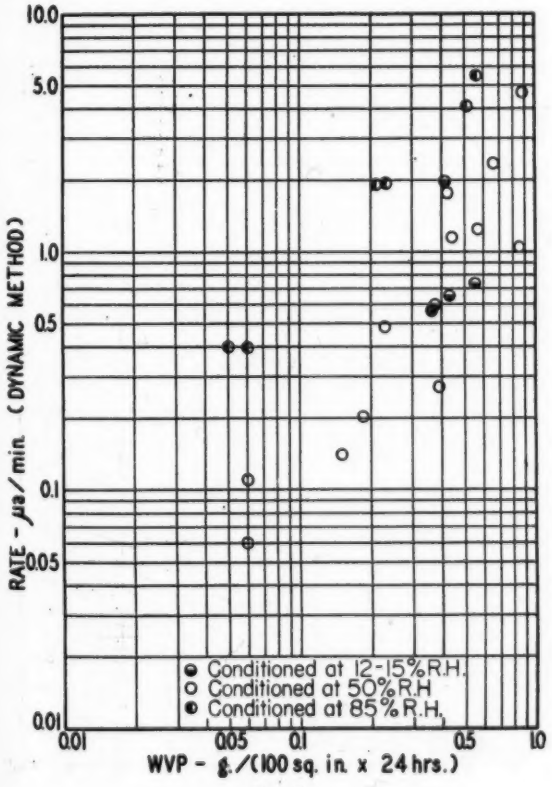

FIG. 3

Correlation of Rate of Rise of Hygrometer Current and Water Vapor Permeability Coated Cellophanes

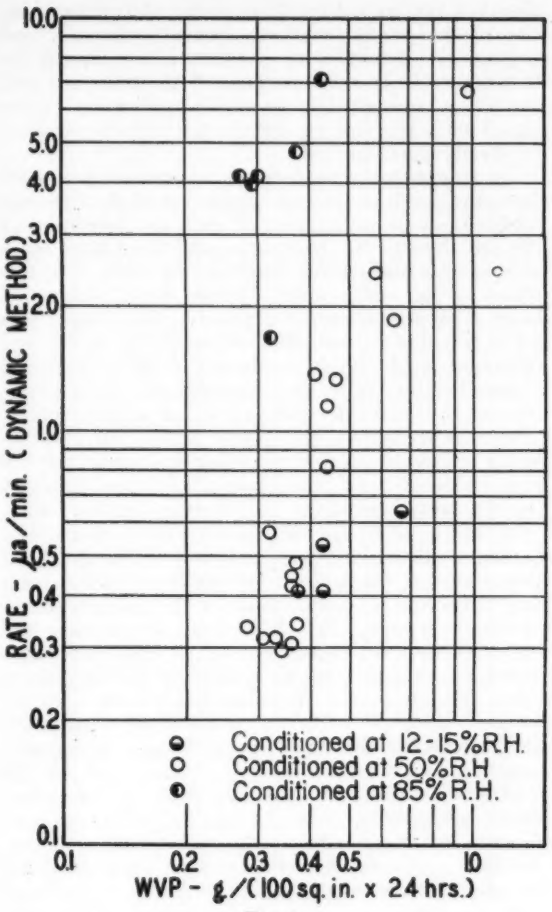

FIG. 4

Correlation of Rate of Rise of Hygrometer Current and Water Vapor Permeability Coated Glassines

relative humidity r_2 is influenced by the mass of the moisture-absorptive material—i. e., the unimpregnated paper—lying above the moisture-resistant barrier. As the water vapor passes upward through the moisture-resistant barrier, a portion of the vapor is retained by the absorptive material. Consequently, the rate of change of r_2 as measured by the hygrometer, is low and is not a correct indication of the permeability of the specimen. The essential equations for the application of a correction to the dynamic results and a detailed discussion of the theoretical side of this problem have been presented in the Appendix to Part VI; these equations are repeated here for the convenience of the reader, with the addition of Equation (7), which gives the rate of change of r_2, the relative humidity in the space above the specimen.

$$dw/dt \cong PA\rho(r_2' - r_1) \quad (1)$$

$$dw/dt = -(dm_w/dt) - \rho V(dr_2/dt) \quad (2)$$

$$m_w = k_1 m r_2' \quad (3)$$

$$\rho V(dr_2/dt) = -k_2 A(r_2 - r_2') \quad (4)$$

$$d^2r_2/dt^2 + a\,dr_2/dt + br_2 = br_1 \quad (5)$$

$$a = pP/k_1m' + k_2/\rho h + k_2/k_1m' \quad (5')$$

$$b = pPk_2/k_1m'\rho h$$

$$r_2 = [(r_2 - r_1)/2\sqrt{(a^2 - 4b)}] \times [(a + \sqrt{a^2 - 4b})\, e^{-(a - \sqrt{a^2 - 4b})(t/2)} + (-a + \sqrt{a^2 - 4b})\, e^{-(a + \sqrt{a^2 - 4b})(t/2)}] + r_1 \quad (6)$$

$$dr_2/dt = [(r_1 - r_2)b/\sqrt{a^2 - 4b}] [e^{(-a + \sqrt{a^2 - 4b})(t/2)} - e^{(-a - \sqrt{a^2 - 4b})(t/2)}] \quad (7)$$

The theory accounts only for the influence on the

observed rate of change of r_2 of the absorptive capacity of the permeable sheet above the barrier, and neglects the influences of moisture absorption in the barrier itself. It is the purpose of the following discussion to present data in which application of the equations was made to correct test results obtained by the dynamic method.

To approach the extreme in severity of test, both from the point of view of application of the dynamic method and from the point of view of application of the equations to the dynamic results for a large mass of moisture-absorptive material, the data for this phase of the study were obtained for a sample of kraft duplex moistureproof paper. The sample was a 150-pound sheet consisting, respectively, of 40- and 60-pound kraft liners laminated with a 50-pound asphalt barrier. In order to minimize the color variations of the kraft liner (because of subsequent reflectance measurements), the sample was a specially selected section of a large roll. For this study, the 40-pound side of the duplex sheet was disposed toward the test space containing the electric hygrometer.

In dealing with a duplex sheet of this construction, a factor which must be considered is the depth of penetration of the asphalt into the liner. This depth determines the remaining mass of the unimpregnated absorptive material which is free to influence the observed rate of change of r_2. It was necessary, therefore, to determine the weight of the unimpregnated portion of the 40-pound kraft liner. An attempt to accomplish this was made by the application of the Kubelka and Munk equation *(2)*. Reflectance measurements were obtained at a wavelength of 550 millimicrons for each specimen used in the subsequent permeability tests. It was hoped that the reflectance of the liner backed by the asphalt would result in R_0 values which would depend upon the depth of penetration of the asphalt. If this were the case, then the relative weights of the unimpregnated portions of the liners could be calculated for the different specimens from the equations.

These measurements and calculations were carried out and the corrections applied to the dynamic results; however, the results were disappointing. It was found early in the work that the opacity of the liner caused the reflectance measurements (R_0) to exhibit a very small spread in value from specimen to specimen. Since the reflectance R_0 is influenced to some extent by the normal variation in the reflectance R of the liner for the different specimens, the corrections resulting from the reflectance measurements were, in many cases, not of the proper order of magnitude.

A more satisfactory method of determining the weight of the unimpregnated portion of the liner was

TABLE I.—EFFECT OF PRECONDITIONING ON THE DYNAMIC TEST DATA

Sample	Preconditioning Relative Humidity, %	Water-Vapor Permeability, g./100 sq. in. × 24 hr.	Dynamic Method, μa/min.
Asphalted Laminated Kraft Paper			
80-1	12–15	0.46	0.39
80-2	12–15	0.42	0.63
80-a	12–15	0.42	0.40
80-b	12–15	0.43	0.48
80-c	12–15	0.41	0.41
80-d	12–15	0.35	0.37
80-1	50	0.50	0.92
80-2	50	0.42	0.74
80-1	85	0.39	0.41
80-2	85	0.39	0.34
90-1	12–15	0.18	0.15
90-2	12–15	0.17	0.11
90-1	50	0.20	0.26
90-2	50	0.17	0.22
90-2	85	0.16	0.15
90-3	85	0.17	0.14
100-1	12–15	0.14	0.19
100-2	12–15	0.14	0.15
100-1	50	0.14	0.21
100-2	50	0.17	0.21
100-1	85	0.16	0.13
100-2	85	0.16	0.21
100-A	12–15	0.14	0.14
100-B	12–15	0.13	0.16
100-C	12–15	0.14	0.18
100-D	12–15	0.16	0.21
120-1	12–15	0.15	0.11
120-2	12–15	0.15	0.11
120-1	50	0.14	0.31
120-2	50	0.15	0.19
120-1	85	0.13	0.14
120-3	85	0.12	0.18
Coated Cellophane Samples			
D_5-1	12–15	0.55	0.74
D_5-2	12–15	0.41	1.98
D_5-3	12–15	0.43	0.66
D_5-1	50	0.44	1.15
D_5-2	50	0.84	1.04
D_5-1	85	0.51	4.08
D_5-2	85	0.56	5.50
D_3-1	12–15	0.36	0.57
D_3-2	12–15	0.37	0.60
D_3-1	50	0.67	2.38
D_3-2	50	0.42	1.79
D_3-1	85	0.23	1.95
D_3-2	85	0.21	1.92
D_1-1	50	0.06	0.06
D_1-2	50	0.06	0.11
D_1-1	85	0.06	0.40
D_1-2	85	0.05	0.40
Coated Glassine Samples			
R-1	12–15	0.37	0.41
R-2	12–15	0.43	0.53
R-3	12–15	0.67	0.64
R-4	12–15	0.43	0.41
R-1	50	0.44	1.16
R-2	50	0.32	0.57
R-3	50	0.64	1.85
R-4	50	0.41	1.38
R-1	85	0.27	4.13
R-2	85	0.29	3.98
R-3	85	0.30	4.14
R-4	85	0.43	7.07
R-5	85	0.32	1.67
R-6	85	0.37	4.75

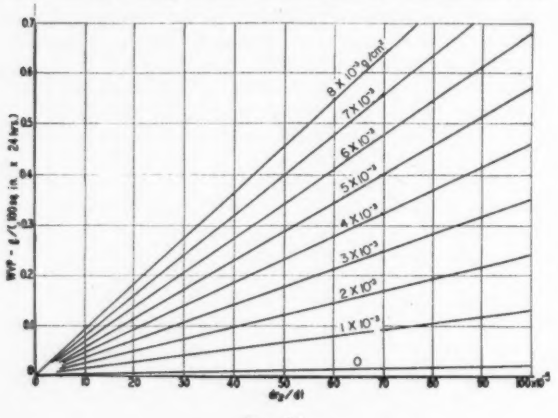

FIG. 5A
Conversion Chart for WVP over the range 0 to 0.7 g./(100 sq. in. × 24 hr.)

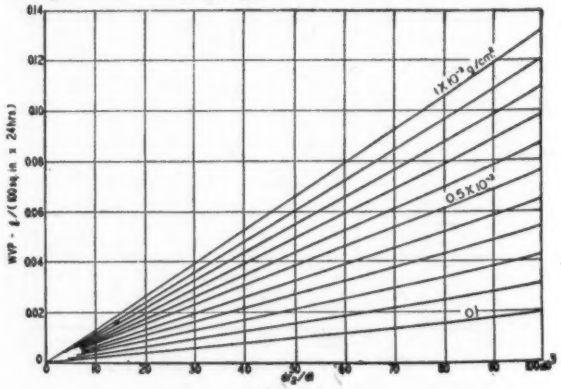

FIG. 5B
Conversion Chart for WVP over the range 0 to 0.14 g./(100 sq. in. × 24 hr.)

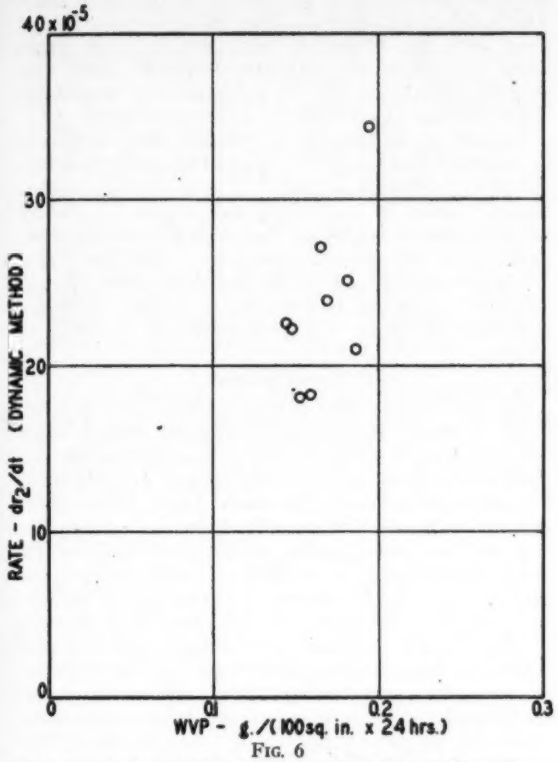

FIG. 6

Correlation of Rate of Rise of Relative Humidity and Water Vapor Permeability Kraft Duplex Paper

used in the later phases of the work. After completion of the dynamic and gravimetric determinations of the permeability, the specimens were removed from the crystallizing dishes and an exactly known area was cut out with a circular die. These samples were soaked in water containing a wetting agent for a period of approximately 1 hour and the unimpregnated portion of the liner was removed, dried, and weighed. The weight per unit area (g./sq. cm.) was calculated and subsequently used in the correction of the data obtained with the dynamic method.

Conversion Chart

Before entering upon the discussion of the above data, it is desirable to present the construction of a conversion chart which has appreciably simplified the calculation of the permeability as obtained by the dynamic method. In the routine testing of water-vapor permeabilities by the dynamic method, the weight corrections by the use of equations would be time consuming and unwieldly to handle. To circumvent this difficulty, it is desirable to construct a chart of the kind shown in Fig. 5*. The vertical axis represents the water-vapor permeability in g./100 sq. in. × 24 hrs. and the horizontal axis the rate of change of the relative humidity (dr_2/dt) at the standardized value of r_2. This chart has constant weight lines, giving the weight per unit area (g./sq. cm.) of the absorptive material of the portion of specimen lying above the moisture-resistant barrier. To demonstrate the use of the chart, a specimen may be considered in which the weight of the portion of the moisture-absorptive material lying above the moisture-resistant barrier is 5×10^{-3} g./sq. cm.; it is assumed also that the measured electric slope (μa/min.) at the standard relative humidity of 0.53 is 0.16 μa/min. If the sensitivity of the hygrometer is 7 μa/1% R. H. (i. e., 7.0/0.01; or 700 μa per unit change in relative humidity), dr_2/dt is obtained by dividing the electric slope (μa/min.) by the sensitivity of the hygrometer, or $dr_2/dt = 0.16/700 = 22.9 \times 10^{-5}$/min. For a dynamic rate of 22.9×10^{-5}/min. and a weight of 5×10^{-3} g./sq. cm., the chart yields a permeability of 0.131 g./(100 sq. in. × 24 hr.).

TABLE II.—COMPARISON OF PERMEABILITIES OBTAINED BY THE GRAVIMETRIC AND DYNAMIC METHODS

Sample	Weight (g./sq. cm.) × 10^{-3}	Dynamic Rate (dr_2/dt) × 10^5	Calculated Rate × 10^5	Gravimetric Method g./(100 sq. in. × 24 hr.)	Dynamic Method g./(100 sq. in. × 24 hr.)
2	6.47	18.1	20.6	0.152	0.135
4	6.84	22.5	18.5	0.144	0.175
5	7.41	21.0	22.1	0.186	0.180
6	7.20	25.1	22.2	0.181	0.208
7	6.83	18.2	20.5	0.159	0.142
12	6.99	34.3	24.4	0.194	0.270
13	6.91	22.2	18.7	0.147	0.175
22	7.11	27.1	20.4	0.165	0.222
49	7.42	23.9	20.1	0.169	0.205
Av.	...	...	...	0.166	0.190

In the development and construction of the conversion chart, typical permeability and weight values were assigned to the constants of Equation (5′) and a and b were determined. Substitution of a and b, together with the proper values of r_1, r_2, and r_3, were made in Equation (6) for the solution of t. An approximate solution of t in Equation (6) led to the simplified form:

$$t = (r_2 - r_3)/[(b/a)(r_1 - r_2)].$$

Having evaluated a, b, and t, the rate of change of the relative humidity (dr_2/dt) may be determined by Equation (7). This process should be repeated until a chart has been constructed which will cover both the range of weight and of permeability of interest. The conversion chart was constructed on the basis of the arbitrary value $k_1 = 0.11$.

The data obtained on the 150-pound kraft duplex sheets for this phase of the study are presented in Table II. Prior to testing, all the specimens were conditioned at a relative humidity of 50% for a period of at least 24 hours and the dynamic test was started 1 hour after the specimens were sealed in the crystallizing dishes. Following the dynamic tests, the gravimetric determinations were made on the same specimens. The weight in g./sq. cm. of the

* This chart is valid only for paper or sheeting having similar absorptive characteristics.

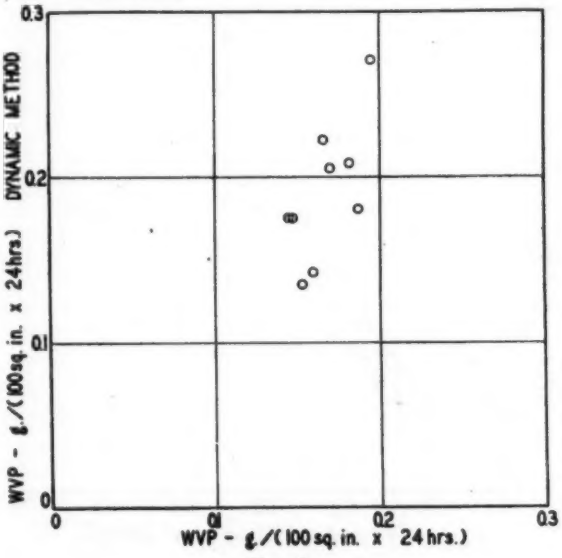

FIG. 7

Correlation of Permeabilities Evaluated by the Gravimetric and Dynamic Methods

portion of the specimen lying above the vapor barrier is given in the second column. The measured dynamic rate and the theoretical rate calculated by means of the equations shown above are given in the third and fourth columns, respectively. The theoretical rate represents the rate of change of the relative humidity r_2 for a specimen having the permeability (gravimetric method) given in the fifth column and the weight given in the second column. The last column gives the permeability as determined by the dynamic rate and the chart (Fig. 5). The general agreement of the dynamic and the gravimetric permeabilities is seen to be fairly good, in spite of the fact that the two methods are entirely unrelated.

The uncorrected dynamic rates given in Table II are plotted in Fig. 6 against the permeabilities as determined by the gravimetric method. The correlation obtained over a small permeability range [0.144 to 0.194 g./(100 sq. in. × 24 hr.)] is not as good as might be desired. For example, approximately the same dynamic rate was obtained for two specimens having permeabilities of 0.144 and 0.186 g./(100 sq. in. × 24 hr.). The differences in permeability [0.042 g./(100 sq. in. × 24 hr.)] of the two specimens is small or large, depending upon the accuracy called for in the specifications.

The permeability values as obtained by the gravimetric method are plotted in Fig. 7 against those obtained by the dynamic method through the chart. It may be observed that the correlation is approximately the same as that in Fig. 6. Again, it should be noted that the permeability values for the two methods agree fairly well, in spite of the fact that they were obtained by two entirely different and independent methods.

For a further interesting comparison of permeabilities obtained by the two methods, Fig. 8 is presented. Data obtained on kraft duplex sheets having different liner weights are plotted on the same chart. The solid dots represent the data for the duplex sheet with the 40-pound liner and the open circles those for the sheet with the 30-pound liner. The agreement between the two independently determined permeabilities is seen to be reasonably good.

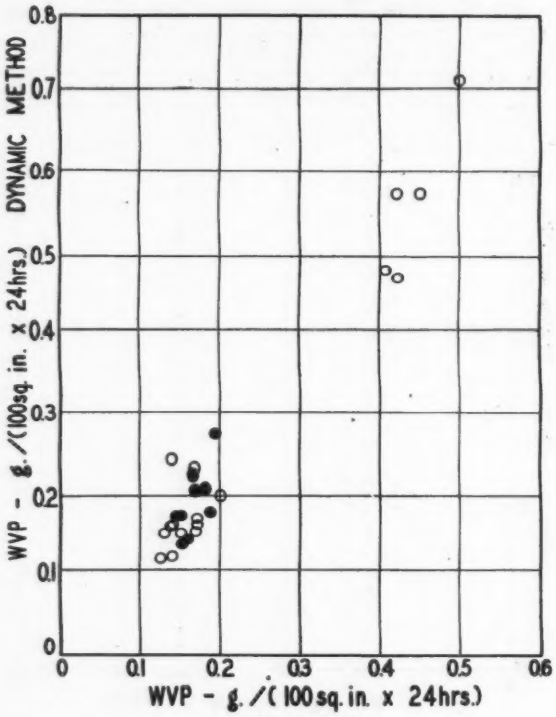

FIG. 8
Correlation of Permeabilities Evaluated by the Gravimetric and Dynamic Methods

In general, it is believed that the basis weight of the nominal liner may be employed in connection with the chart presented in Fig. 5. The small improvement brought about by measuring the weight of the absorptive portion would not be worth the tedious effort required to remove and weigh that portion. Therefore, for routine use in the mill laboratory, it may be more convenient to construct the chart with constant weight lines for the commonly used basis weights.

Conclusions

The dynamic method can be a rapid, effective, and fairly accurate means for evaluating water vapor permeability. To achieve an accurate evaluation, recognition must be made of two factors in addition to the permeability of the specimen. These factors have a significant influence on the dynamic results. The first of these concerns the moisture-absorptive capacity of the material lying above the moisture-resistant barrier and disposed toward the test space. Absorptive material above the barrier lowers the rate of increase of the relative humidity in the test enclosure and, hence, a low dynamic result is obtained. A correction of dynamic results for the weight of the absorptive material of a specimen leads to a good correlation between the gravimetric and the dynamic methods. This correction can be easily applied through the use of a chart. The second factor concerns the moisture content of the specimen prior to testing. To obtain a good correlation between the dynamic and gravimetric methods, it is necessary to condition the specimen to a constant moisture content. The conditioning time will depend upon the type of moistureproof material.

Literature Cited

1. Institute of Paper Chemistry. Instrumentation Studies. LII. Progress report on the development of two new electric methods for the measurement of water-vapor permeability. *Paper Trade J.* 122 No. 1:35-44 (Jan. 3, 1946).
2. Kubelka, P., and Munk, F. Ein Beitrag zur Optik der Farbanstriche. Tech Physik 12: 593-601 (1931). *See also* Steele, F. A. The optical characteristics of paper. I. The mathematical relationships between basis weight, reflectance, contrast ratio, and other optical properties. *Paper Trade J.* 100, No. 12: 37-42 (March 21, 1935); *Tech. Assoc. Papers* 18: 299-305 (June, 1934).

TAPPI Notes

Noel R. Phillips, formerly of the Cowles Detergent Company is now with Hollingsworth & Whitney, Waterville, Maine.

Russell F. Erickson, formerly of Hollingsworth & Whitney is now plant engineer for Rayonier, Inc., Fernandina, Fla.

E. Schoenberg, formerly of the Upper India Couper Paper Mills Company is now works manager for Shree Gopal Paper Mills, Ltd. Abdullapena, India.

Salvador Arena, formerly of the Aurora Paper Mills is now a consulting engineer in Mexico City, Mexico.

The Lake States section of the Technical Association of the Pulp and Paper Industry will meet on Tuesday, February 12, 1946 at 6:30 P.M. at the American Legion Club House, Appleton, Wis. Charles Muzzy and Warren Shaw of the E. D. Jones Company and Frank Frothingham of the Bird Machine Company will speak on "Paper Machine Screens."

Preplanning of Logging Operations For Minimum Costs*

By Don M. Matthews[1] and John A. Willard[2]

Abstract

The extreme variability of logging operations makes it difficult to set standards for operating costs although their need is recognized. Information required for adequate preplanning includes volume per acre and costs of skidding, loading, hauling and the construction work that is attendant. With this information it is possible, with the data given, to analyze and estimate transportation costs. Examples are presented illustrating the use of the formulas which the authors have developed.

Logging presents an extremely variable production problem. In industry, under conditions of repetitive manufacture, the production problems remain more or less constant for considerable periods of time. Under these conditions planning of the production process and the development of a minimum cost of production has received a tremendous amount of engineering and management attention. The result is that under these circumstances costs are usually at a minimum, and furthermore, what has been done in the past is a reasonably accurate indication of what costs may be in the future.

In the logging industry, however, practically no two stands of timber are alike and even in the same section some factors of production cost may be markedly different, resulting in radical changes in operating cost.

This extreme variability of operating conditions has made it difficult to set standards for operating cost. There is a real need for a knowledge of what operating costs *ought* to be for comparison with what they *are*. As an example, it has been customary simply to turn the logging job over to an experienced woods boss and relax with the feeling that he is going to do whatever needs to be done to produce the work as inexpensively as possible. Experience, however, has indicated that this is seldom effective in bringing about a minimum cost of operation. Again, experience with the methods outlined in this paper indicates that it is usually possible to cut costs by at least 25% through the application of these methods as compared with leaving the planning to the rule-of-thumb management of a woods boss no matter how competent.

As an example of these needs for variable operating standards, there was the case of a study of 1 year's operations in logging on a chance in the Sierra Nevada Mountains on heavy timber. During this season under study, the costs were found to be about $2.75 a thousand board feet more than the general average of the past or the general average of adjacent competitors. Analysis showed that more than half the production for the season had come from a series of deep canyons where operating costs were extremely high.

Advance estimates and a knowledge of what these costs were likely to be would have forewarned the management and shown the desirability of logging these areas only in times of high prices and/or high taxes.

Or, if the need for logging these areas in conjunction with adjacent sections was imperative, the higher costs would have been recognized in advance and due allowance made for them in budgeting operations. The techniques described herein permit a predetermination of what operating costs should be in areas that vary over a wide range of conditions. They thus permit valid current comparisons with what costs actually are and a setting-up of real yardsticks of operating efficiency.

Again, these standards may be utilized to permit the adoption of incentive methods of pay so that personnel may be adequately compensated for accomplishment against these standards.

Incentive methods of paying wages have been used in the woods in connection with the standards developed through the use of the technique herein described. The management can amply afford to pay the woods crew a bonus for keeping costs down to the standard, because, as previously stated, the adoption of these preplanning methods can result in an over-all reduction in cost of probably not less than 25% as compared with the best operations carried on without the benefit of preplanning.

Space does not permit presenting the details of such a plan herein.

Preplanning Technique

Moderate to considerable changes in the method of production must be planned for in advance as the operation moves from stands of one character and density to another, from one size of timber to another, and encounters varying types of topography and ground cover.

Under such circumstances the data of past cost may be of little value in estimating future cost. Production must be planned for and cost estimated currently as the operation proceeds. At least a preliminary or approximate cruise must be made to provide a knowledge of the volume per section and the nature of the stand. Comparisons of cost by one method of production vs. another will be constantly in demand and methods of quickly determining the most efficient plan of production without resorting to slow and laborious total cost comparisons are essential to the prompt decisions which are often demanded.

The technique of determining in advance the plan of operation which will result in minimum cost and maximum efficiency in the use of labor and equipment rests upon a knowledge of what factors control cost and the manner in which this control is effected. Broadly all costs of logging fall into two categories:

Direct Costs. Labor and machine costs incurred in felling, bucking, skidding, loading, and transporting logs.

Fixed per Acre or per Year Costs. Funds expended

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[1] University of Michigan, Ann Arbor, Mich.
[2] Partner, Bigelow Kent Willard and Co., New York, N. Y.

to prepare the logging area for the operation of labor and machines and to supervise and direct their work.

The justification for expenditure of funds in the "fixed cost" category lies in the reductions thus to be obtained in the amount of funds expended in the "direct cost" category. No justification can be found for an increase in fixed cost expenditure unless a more than compensatory reduction in direct cost expenditure can be anticipated therefrom. Conversely a decision to refrain from incurring a fixed cost expenditure should not be made until the result of such expenditure upon direct costs has been measured and found unsatisfactory. Success in planning and managing a logging operation depends upon ability to determine when and how fixed expenditures are justified and should be increased and when and how they are excessive and should be reduced. The objective in planning will always be that of achieving a minimum for the sum of direct and fixed costs when they are both expressed per volume-unit of output. Consideration of the way in which fixed cost expenditure will affect the cost of the various direct operations and methods of measuring the affect are, therefore, of prime importance.

Log-making (felling, marking and limbing, and sawing) is the first step in the production process. The cost of this operation is largely that of direct labor and simple direct machine cost. For the most part it is independent of the volume per acre and fixed-per-acre expenditure and varies with the species, timber size and form, topography and ground cover —all factors which are fixed for the particular logging chance. It is, nevertheless, an important cost item which can be controlled only through instruction of the workmen and development of production standards. Such expenditures are more likely to be fixed per year rather than fixed per acre.

Transportation Costs

After completion of the log making process the balance of the logging operation is almost entirely a problem in transportation. It begins with off-the-road skidding or hauling and continues through steps involving a demand for progressively higher types of loading equipment and road facilities which all contribute to fixed-per-acre expenditure. Every step in the process compels a decision as to how much should be spent on facilities which are fixed to the site in order to reduce the cost of loading logs and moving them toward the delivery point. Obviously such expenditures are recoverable only by spreading their cost against the volume of timber which is to be extracted. Such expenditures can be kept very low, but if this is done, the direct costs which they affect will be high. A low-class exterior road can be constructed which might cost but a few cents per thousand board feet for the timber on the total area served by that road. In that event a high hauling cost will be incurred for every thousand board feet or cord of wood which is extracted. Low-class interior roads can be constructed and spaced at wide intervals but then the cost of skidding timber to them and of hauling over them will be high. Logs can be loaded by cross-haul at roadside instead of at the landings required by more efficient semistationary loading equipment; but in that event the cost of lost time on trucks while loading will be increased although the cost of skidding the timber to landings will be greater than that of skidding it direct to roadside.

At every step in the transportation process a minimum-cost balance must be struck for the sum of

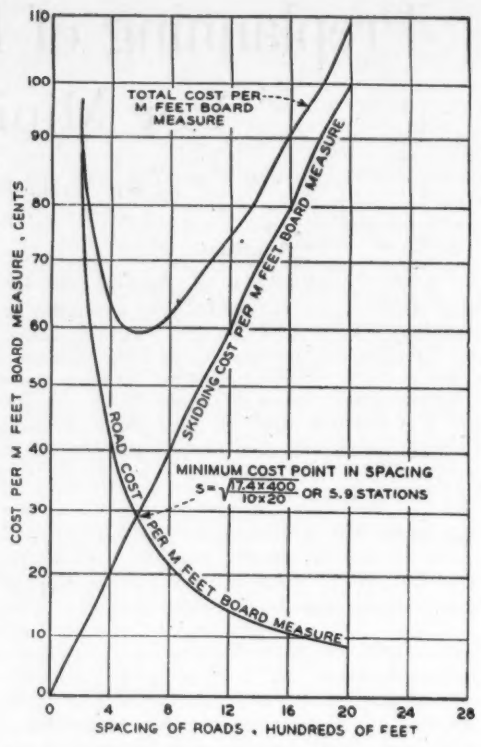

FIG. 1 VARIATION IN SKIDDING COST, ROAD COST, AND TOTAL COST WITH SPACING OF ROADS

a fixed-per-acre cost and the direct cost which is complementary to it. To strike such a balance the direct cost must be known on a volume-unit, distance-unit, or work-unit basis; the facilitating fixed-per-acre cost must be calculated; and the volume per acre which is to be extracted must be known so that the fixed cost can be spread against it. In summary form the information necessary to preplanning a logging operation for minimum cost may be listed as follows:

1. Volume per acre to be extracted for each "side" or other logging area-unit.
2. Skidding:
   (a) Fixed cost per thousand board feet or cord for hooking, unhooking and turn-around time.
   (b) Variable cost of skidding 1,000 fbm. or 1 cord a unit distance such as a chain or a station of 100 feet.
3. Loading:
   (a) Direct cost of machine operation on a time basis.
   (b) Time to load per thousand board feet or cord inasmuch as this will govern vehicle stand-by cost per volume-unit.
4. Cost of landing preparation and of moving and setting up loading equipment.
5. Hauling:
   (a) Stand-by or idle cost of truck per hour while loading and unloading.
   (b) Running cost of truck per hour.
   (c) Load carried.
   (d) Speed of truck on roads of various types.
   (e) Time to unload truck at delivery point.
6. Costs of construction of roads of various types correlated with the speeds which trucks can maintain over these roads.

A considerable portion of the above listed data can often be obtained from the records of an operating company although it will usually not be available in the form indicated. Some data will normally have to be obtained from observation and timing of operations on the ground — particularly the loaded and empty run speeds of tractors and trucks and the fixed time of these machines at loading and unloading points. A trained observer can usually obtain the information necessary to the preliminary preplanning of an operation within a week or 10 days, but no operator should attempt to make permanent use of such data. Arrangements must be made for its con-

tinuous collection so that it will be constantly up to date. This does not mean that an established system of cost accountancy need be scrapped and an alternative method adopted to acquire the necessary unit-cost data. Rather it means that certain data will pass through different channels to the cost accountant, reach him, perhaps, in a slightly different but quite as useful form and be used in transit to tell the cost story of the future instead of merely being recorded by the accountant to tell the cost story of the past. This procedure is likely to bring about a readjustment of any rigid cost classification which may be in effect and a recognition of the fact that certain so-called "fixed costs" are not the inflexible budget items that they appear and that other so-called "variable costs" are, in part, fixed and should be so treated.

With data such as the above available, the technique of planning the operation so as to achieve a minimum sum for the total of fixed-per-acre and direct costs is neither difficult to understand or apply. Broadly speaking it rests upon a recognition of the fact that, as fixed-per-acre costs are incurred to reduce direct costs, it will pay to increase any fixed cost as long as such increase, when expressed per volume-unit, results in a more than compensatory reduction in the complementary direct cost.

Cost Formulas

Any fixed cost can be expressed per volume-unit as F/VA where F represents the total cost of the facility (road, landing, or other improvement fixed to the site), V represents the volume per acre, and A represents the area against which the cost is to be spread. Any direct cost can be expressed as $C \times D$ where C is the cost of moving the product (1000 fbm or cord) a unit distance and D is the distance through which it must move. Either C or D may be controlled by the value of the quantity F or the way that quantity may be spread against the area on which the volume of timber to be removed is found. If these two cost components can be set down in terms which will express both area and distance, and if volume is known, it will be found that a minimum for their sum will be obtained when the values of the two components are equal. A very high volume-unit fixed cost resulting from spreading the total cost of the facility against a small area will decrease very rapidly on a reciprocal curve as the area it serves increases. The complementary direct cost will increase at a constant rate. Prior to the point at which they are equal the volume-unit fixed cost will fall more rapidly than the direct cost increases — after that point it will fall more slowly. This being the case it is merely necessary to equate these two cost components in terms which will permit the solution of the equation for any cost-factor over which control is to be effected.

The best approach to the development of equations which can easily be solved to determine the quantity of any controllable factor which will bring about equality as between fixed and direct volume-unit costs is that of writing total cost formulas and the selection from these formulas of the cost components which should be brought into balance. To illustrate, assume that the following cost data are available with regard to a logging operation:

F = fixed cost of tractor skidding	$1.00 per M fbm.
C = variable cost of tractor skidding per station of 100 feet	0.20 per M fbm.
r = cost of spur road construction	4.00 per station
S = spacing of spur roads	25 stations
L = cost of loading trucks (includes truck stand-by charge)	$1.23 per M fbm.
H = cost of truck hauling per station of 100 feet	0.013 per M fbm.
D = average length of spur roads	10,000 feet or 100 stations
V = average volume per acre	10 M fbm.

A total cost formula which will express the transportation cost per thousand board feet for logs on trucks at the junction of the spur roads with the main haul road would read:

$$\text{Cost per M} = F + CS/4 + \frac{r/0.229}{VS} + L + HD/2 \qquad (1)$$

In equation 1 the expression $CS/4$ represents the cost of skidding logs to the spur roads through an average distance of ¼ the spacing of the roads. To this the quantity F would have to be added but it would not vary with distance. The average skidding distance would be $S/4$ because the maximum distance would be $S/2$ and the minimum distance would be zero. The complementary facilitating fixed-per-acre cost is the cost of the spur roads per thousand board feet. This can be expressed as $\frac{r/0.229}{VS}$ because, if roads were spaced 100 feet apart, each station or road would serve 10,000 square feet or 0.229 acres. It follows that $r/0.229$ represents the cost of the roads per acre if they were spaced at intervals of one station; and this quantity divided by the product of the volume per acre and actual spacing in stations determines the cost of the roads per thousand board feet for any volume and any spacing measured in stations of 100 feet. The expression $HD/2$ represents the cost of hauling the timber over the spur roads to the main haul road because the average hauling distance will be half the average total spur road length.

The above total cost formula, equation 1, is a useful tool for estimating cost even if none of the cost factors involved is subject to control. If any or all are subject to control, the use of the formula directs attention to the cost items which are out of balance. For the production situation as described, cost can be estimated as shown in Table I.

TABLE I.—COST IN DOLLARS PER 1000 BOARD FEET

	Dollars per M fbm.
Fixed skidding cost, F	$1.00
Variable skidding cost, $CS/4$ or $0.20 \times 25/4$	1.25
Road construction, $\frac{r/0.229}{VS}$ or $\frac{\$4.00/0.229}{10 \times 25}$	0.07
Loading, L	1.23
Hauling, $HD/2$ or $0.013 \times 100/2$	0.65
Total cost on trucks at main haul road	$4.20

It is to be noted from Table I that the variable cost of skidding is about 18 times the cost of road construction per thousand board feet whereas, for minimum cost, these two items should be approximately equal. It is conceivable that the topographical features of the territory to be logged might be such as to compel the spacing of roads at intervals of approximately one-half mile. If such were a fact, the cost situation could only be improved by selecting a different type of skidding machine which would be more economical on the long haul required, and by improving the type of road so as to develop a higher speed for trucks and thus a lower hauling cost. Topography, however, rarely exerts such a rigid control over the location of spur roads; and an unsatisfactory cost, such as the above, often exists on areas where roads can be spaced at any desired interval, and goes unchallenged because no cost breakdown, such as the foregoing, has been prepared to draw it to the attention of the operator. If the spacing of roads is controllable, then they should be so spaced as to bring about equality of variable skidding cost

and spur road construction cost per thousand board feet. A formula which will determine the quantity of such spacing for any combination of variable skidding cost, road construction cost, and volume per acre, can be developed by equating the variable skidding cost component, $CS/4$, and the road construction cost component, $\frac{r/0.229}{VS}$, as follows:

$$CS/4 = \frac{r/0\ 229}{VS}$$

Multiplying by $4S$ $$CS^2 = \frac{17\ 4r}{V}$$

Dividing by C $$S^2 = \frac{17.4r}{VC} \text{ and } S = \sqrt{\frac{17\ 4r}{VC}} \qquad (2)$$

Substituting the appropriate values from the production situation here being discussed

$$S = \sqrt{\frac{17.4 \times 400}{10 \times 20}} \text{ or } \sqrt{34.8} = 5.9 \text{ stations}$$

Cost for variable skidding and road construction can now be estimated in dollars per thousand board feet as follows:

Skidding,	$CS/4$ or $\$0.20 \times \frac{5.9}{4}$	= $0.295
Road construction,	$\frac{r/0.229}{VS}$ or $\frac{\$4.00/0.229}{10 \times 0.20}$	= $0.295
Total		$0.59

The cost reduction brought about by this simple preplanning technique amounts to $1.32 minus $0.59 or $0.73 per M fbm, a total of $7.30 per acre for the area included in the logging chance on account of variable skidding cost and spur road construction cost alone.

Hauling Costs

For the production situation here being discussed, this is the major cost reduction which can be effected through proper planning for the use of the equipment which has been assumed to be available. However, two other cost items, hauling and loading, will merit investigation. A hauling cost of $0.65 per M fbm for hauls averaging only about 1 mile is clearly excessive, and a breakdown of this cost is indicated as the first step to determine whether or not it can be improved. This cost depends upon the machine rate for the trucks being used, the loads they carry, and the speed they maintain on the type of spur road which is being provided. Investigation might develop the following facts:

Machine rate for trucks:	
Fixed per hour cost (stand-by or idle time cost)	$1.45
Operating per hour cost (costs which accumulate only when truck is running)	1.00
Running cost per hour	$2.45
Average load 1.2 M fbm.	

The unit hauling cost per thousand board feet per station of hauling distance for any truck can be determined from a formula which reads:

$$\text{Cost per M fbm. per station} = \frac{2T}{G \times L \times 52.8} \qquad (3)$$

where T = truck running cost per hour, in this case $2.45
L = average load carried, thousands of board feet measure, in this case 1.2 M fbm.
52.8 = the number of 100 foot stations per mile
G = average round trip travel speed in miles per hour, undetermined

The average travel speed can and should, of course, be determined by timing trucks over the roads which are being used. However, in this case, the unit cost per thousand board feet is presumed to be known and is 1.3c, and the average speed can be determined from the formula by inserting the appropriate values, as follows:

$$1.3c = \frac{2 \times 245}{G \times 1.2 \times 52.8} \text{ or } G = \frac{490}{82.2} \text{ or } 5.98$$

If it be assumed that trucks are carrying their maximum safe load at 1.2 M fbm it is apparent that the hauling cost can be reduced only by increasing the speed of travel of trucks by improving the type of spur road provided them. Improvement of the type of spur roads will, of course, increase fixed-per-acre expenditure and whether this can be justified depends upon the current relative costs of road construction and hauling per thousand board feet measure. Under the revised plan of road layout, roads have been estimated to cost 29.5 cents per M fbm and hauling 65 cents per M fbm. Applying the general rule that, for maximum economy, fixed-per-acre costs and their complementary direct costs should be in approximate balance, it is apparent that some expenditure on the improvement of roads will be justified. The limit of any such increased expenditure as will be justified cannot be determined by direct calculation, inasmuch as it will be governed by the type of improvement required to increase speed and the amount of increased speed obtained. Data as to improvement costs and their effect on speed will be required; and with these in hand comparative cost calculations must be resorted to in order to determine what type of improvement can be undertaken. However, it should be borne in mind that doubling the cost of the roads will not double their unit cost per thousand board feet because, by means of the spacing formula, the spacing will be altered so as to prevent this. Bearing this in mind *it is safe to say that when unit road costs are half or less than half of unit hauling costs, anything up to double current costs of road construction can be incurred if, thereby, the speed of trucks on these roads can be doubled.* This is, of course, only a generalization and does not obviate the necessity for comparative cost calculations.

Assume that, in the case here being considered, it is estimated by a competent engineer that an improvement in the alignment and grade of the spur roads which are being constructed can be effected at a cost of $2 per station which will permit trucks to travel at an average speed of 8 mph. and that surfacing and the addition of gravel on certain portions of the roads can be effected at the additional cost of $3 per station with a resulting speed of 16 mph. for trucks The following comparative cost calculations are now in order:

Costs which will be affected by a change in road type are, in cents per thousand board feet, under the current plan, as follows:

Variable skidding cost	29.5
Road construction cost	29.5
Hauling cost	65.0
Total	124.0

If alignment and grade of the roads only are improved, construction costs will be $6 per station and roads should be spaced at $\sqrt{\frac{17.4 \times 600}{10 \times 20}}$ or 7.2 stations. The unit hauling cost per station on these roads would be $\frac{2 \times 245}{8 \times 1.2 \times 52.8}$ or 0.96 cents per M fbm. Costs in cents per thousand board feet can be estimated as follows:

Variable skidding cost, $CS/4$ or $20 \times 7.2/4$	36.0
Road construction, $\frac{r/0\ 229}{VS}$ or $\frac{600/0.229}{10 \times 7.2}$	36.0
Hauling, $HD/2$ or $0.96 \times 100/2$	48.0
Total	120.0

If, in addition to alignment and grade improvement, the roads are further improved by surfacing and the addition of gravel where required, construction costs will be $9 per station. In that event roads should be spaced at $\sqrt{\frac{17.4 \times 900}{10 \times 20}}$ or 8.9 stations. The unit hauling cost on such roads would be $\frac{2 \times 245}{16 \times 1.2 \times 52.8}$ or 0.48 cents per M fbm. per station. Costs in cents per thousand board feet can be estimated as follows:

Variable skidding cost, $\frac{CS}{r/0.229}/4$ or $20 \times \frac{8.9}{900/0.229}/4$	44.5
Road construction, $\frac{HD}{VS}/2$ or $0.48 \times \frac{100}{10 \times 8.9}/2$	44.5
Hauling, $HD/2$ or $0.48 \times 100/2$	24.0
Total	113.0

It is evident from the foregoing calculations that a much higher type of interior road than was originally planned for is not only justified but is required if minimum cost is to be achieved. The cost reduction effected by the use of the higher type road is not great when expressed per thousand board feet but, nevertheless, it amounts to $1.10 per acre — a not insignificant sum when considerable areas are involved. Moreover the use of the higher type road carries with it nonmeasurable economies such as fewer truck breakdowns, greater daily output, and the possibility of all-weather operation. The average operator recognizes that all these advantages are to be obtained from the use of good roads but usually contends that the expense of their construction cannot be justified. His tendency is always to "get by" with the minimum of fixed-per-acre expenditure and without measuring the results of such false economy upon his direct costs.

Loading Costs

The final item of cost which should be examined in this illustrative case is that of loading. This item is always a mixed cost although usually not so recognized. It is made up of the actual direct loading cost plus the stand-by charge of the truck while being loaded. Too often the stand-by charge of the truck is ignored as a part of the loading cost and covered into the total of hauling costs as a hidden item thus obscuring the fact that it may be inefficient loading equipment which makes for high hauling costs and not inefficient hauling per se. In this case the loading cost has been quoted to include the stand-by charge of the truck. It is instructive to see how this item might break down.

Assume that, in this case, loading is accomplished by cross-hauling at roadside with a team and teamster costing $1 per hour. The capacity of the operation is 1 M fbm. in 30 minutes and the operation is so planned that the team is kept fully employed. Loading might, therefore, be quoted at $0.50 per M fbm. and, in most cases, would be so quoted. In this case it has been quoted at $1.23 per M fbm. the balance of $0.73 being the stand-by charge of the truck at $1.45 per hour. This method of quoting costs makes it very evident that it will pay to increase the efficiency of the loading operation so as to reduce loading time even if this does involve further fixed-per-acre expenditure in the preparation of landings and the moving in and setting up of semi-stationary loading equipment. The introduction of fixed loading points into the logging program will necessarily change the technique of arriving at the proper spacing of roads. Not only will roads have to be spaced at their economic interval but so will landings. Logs will no longer move directly to roads but will be gathered from rectangular areas to landings located at the centers of these areas. The variable cost of skidding, the cost of roads and landings, the cost of loading, and the stand-by charge of the trucks being used will all have to be brought into satisfactory balance. Space does not permit of a discussion of the methods which may be used to accomplish this. It will, perhaps, be sufficient merely to state that any logging operation, whether it be conducted on a farmer's 40-acre woodlot or on 40,000 acres of virgin timberland, presents an interesting problem in logistics which submits readily enough to a little practical algebra and plane geometry. And it can be made to yield an excellent return on the cost of administration.

Rapid Method for the Determination of Beta- and Gamma-Cellulose

By Norman S. Lea[1]

Abstract

Several methods of filtering the precipitated beta-cellulose after a short settling period were investigated. It was found that filter papers absorbed gamma-cellulose from solution. Alundum filters were undesirable because of the slow rate of filtration. Gooch crucibles containing an asbestos fiber mat gave a complete separation of beta- and gamma-cellulose with gamma-cellulose results comparable to the overnight settling decantation method. A detailed procedure is given.

Methods in general use for the determination of beta- and gamma-cellulose usually specify an overnight settling of the beta-cellulose after precipitation with acid. This means long delay before the supernatant liquor containing the gamma-cellulose can be decanted and tested.

This work was undertaken to eliminate the long settling time and to develop by means of filtration a rapid method suitable for routine testing.

General Procedure

The method followed was a modified volumetric determination of beta- and gamma-cellulose proposed by Launer *(1)*. The filtrate from the determination of alpha-cellulose *(2)* was tested by means of oxidation with potassium dichromate followed by a back titration with ferrous ammonium sulphate to determine beta- plus gamma-cellulose.

To obtain a value for gamma-cellulose Launer specified acidification, overnight settling, and decantation to separate the beta- from gamma-cellulose, whereas, the following procedure was introduced in

[1] Asst. Plant Chemist, B. C. Pulp & Paper Co., Ltd., Woodfibre, B. C.

this experimental work. The beta-cellulose was precipitated from alpha-cellulose filtrate with acetic acid. The mixture was then heated for 30 minutes in a steam bath and cooled to 20° C. before filtration by the various methods.

All tests were conducted on a sample of bleached, dissolving pulp made by the sulphite process.

A gamma-cellulose determination was run on decanted supernatant liquid resulting from heating acidified alpha-cellulose filtrate for 30 minutes and allowing the beta-cellulose to settle overnight. This gamma result was compared with the values obtained by means of filtration.

Experimental Data and Results

Filter Papers

Results are found in Table I. The gamma-cellulose values obtained by paper filtering show variation with the porosity of the filter paper used and are all considerably lower than the gamma result obtained on decanted supernatant liquid after overnight settling.

There is indication that filter papers absorb gamma-cellulose since a large drop in gamma-cellulose content results from pouring decanted gamma-cellulose liquid through a filter paper. Thus, filter papers cannot be used for the separation of beta- and gamma-cellulose.

Alundum Filters

This means of filtering beta-cellulose was abandoned because of the slow rate of filtration.

Gooch Crucibles (Asbestos)

The results are shown in Table II. Gamma-cellulose values are reproducible and are comparable with the overnight decantation method. Results indicate no absorption of gamma-cellulose when using asbestos.

TABLE I.—PAPER FILTERING

Test	Treatment	Gamma-Cellulose, %	Beta-Cellulose, %
1.	Filtered after cooling (20°C.), Whatman No. 1	3.74	4.33
2.	Filtered after cooling (20°C.), Whatman No. 32	3.50	4.57
3.	Filtered after cooling (20°C.), Whatman No. 40	3.79	4.28
4.	Filtered after cooling (20°C.), Whatman No. 42	3.57	4.50
5.	Decanted after overnight settling	4.32	3.75
6.	Decanted after overnight settling and filtered Whatman No. 1	3.60	4.47

TABLE II.—ASBESTOS FILTERING

Test	Treatment	Gamma-Cellulose, %	Beta-Cellulose, %
1.	Filtered after cooling (20°C.)	4.40	3.67
2.	Decanted after overnight settling	4.32	3.75
3.	Decanted after overnight settling and filtered	4.38	3.69

Details of Rapid Method

Test Specimen

The test is run on filtrate from the alpha-cellulose determination (TAPPI Standard T-203 m-40).

Reagents

Potassium dichromate solution (90.0 grams per liter).

Ferrous ammonium sulphate (159.9 grams per liter).

Acetic acid, 50%.

Phosphoric acid, 85%.

Sodium diphenylamine sulphonate indicator solution, prepared by adding 3.17 grams barium diphenylamine sulphonate and 5.0 grams sodium sulphate to 1 liter of water, mixing well, allowing to stand overnight, and filtering.

Procedure for Beta- Plus Gamma-Cellulose

Make the filtrate from the alpha pad up to 1 liter in a volumetric flask.

Pipet 5.0 ml. of standard dichromate solution into 100 ml. of this solution in a 500 ml. conical beaker and add 50 ml. of concentrated sulphuric acid. Boil for exactly 10 minutes. Add 150 ml. of cold water and cool to 20° C.

Add 15 ml. of phosphoric acid and 8 drops of sodium diphenylamine sulphonate indicator. Titrate in ferrous ammonium sulphate to the first green color.

Procedure for Gamma-Cellulose

Acidify a further 400 ml. portion of the alpha-cellulose filtrate with acetic acid, using a few drops in excess (20 ml. is the amount usually required). Coagulate the beta-cellulose by heating in a steam bath for 30 minutes, then cool to 20° C. in a cold water bath. Filter through a Gooch Crucible containing asbestos, using mild suction.

Treat 105 ml. of the filtrate (100 ml. plus 5 ml. to compensate for the acetic acid) as for beta- plus gamma-cellulose.

Calculations:

One milliliter of standard dichromate is equivalent to (90)(0.1375)/(1000) = 0.012375 grams cellulose.
Let K_1 be milliliters of ferrous ammonium sulphate solution equivalent to 5.0 ml. of dichromate.
Let K_2 be the factor $61.875/K_1$.

Titration refers to milliliters of ferrous ammonium sulphate equivalent to dichromate solution in excess after cellulose oxidation. Therefore, milliliters of dichromate to oxidize the cellulose = 5 — 5 (titration)/K_1. This represents 0.012375 (5 — 5 (titration)/K_1) = 0.061875 (1 — titration/K_1) grams of cellulose. Since aliquot portion is 1/10 of the total, the grams of cellulose in total

$$= \frac{100\ (0.61875)\ (1 - \text{titration}/K_1)}{\text{Moisture-free weight of pulp for alpha determination}}$$

Formula:

$$\%\ \text{Cellulose} = \frac{K_2\ (K_1 - \text{titration})}{\text{Moisture-free weight of pulp for alpha determination}}$$

Literature Cited

1. Launer, H. F., "Simplified volumetric determination of alpha, beta, and gamma cellulose in pulps and papers." Research Paper RP 979, National Bureau of Standards, 18, No. 3 (March, 1937).
2. TAPPI Standard, T-203 m-40.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Shu-Tang Han, Engineer, War Production Board of China, Chungking, China, a 1937 graduate of Tsing Hua University.

Franklyn D. Haynes, Laboratory Technician, Container Corp. of America, 12401 Euclid Ave., Cleveland, Ohio, a 1940 graduate of Fenn College.

Robert A. Holcombe, Graduate Student, New York State College of Forestry, a 1944 graduate of North Carolina State College.

Edward A. Johnson, Chemist, Maxwell Paper Company, Franklin, Ohio, a 1940 graduate of Ohio Northern University.

Niels Klein, Chemical Engineer, Charles Bruning Co., Inc., 100 Reade St., New York, New York, a 1938 graduate of Rensselaer College.

Franklin S. McCarthy, Acting Development Manager, Canadian Industries Limited, Montreal, P. Q., Canada, a 1935 graduate of the University of Toronto.

Paul R. Anderson, Chief Chemist, Bryant Paper Company, Kalamazoo, Michigan, a 1941 graduate of the New York State College of Forestry.

James Robert Church, Superintendent, Carthage Paper Makers, Inc., Carthage, New York.

Gustaf Edling, Vice-President, Swedish Steam Boiler Users Association, Stockholm, Sweden, a 1922 graduate of the Technical University, Stockholm.

Norman B. Gibbs, Consulting Engineer, Brooks Scanlon Corporation, Foley, Florida. Attended the University of Washington.

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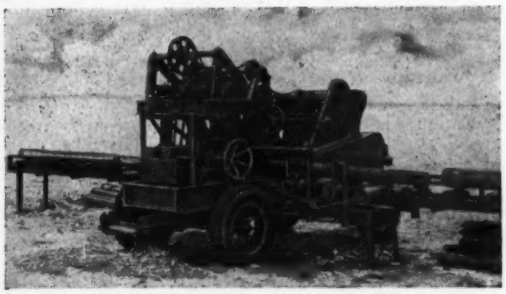

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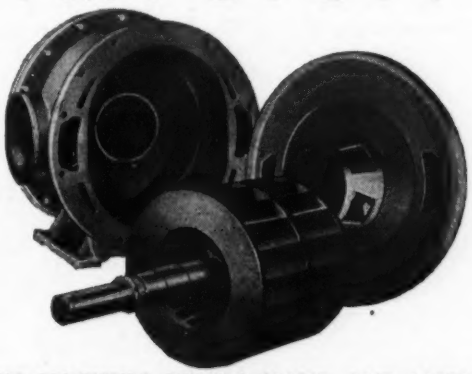

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New York Paper and Pulp Market Review

Demand For Paper and Wood Pulp Above Supply—OPA Increases Producers' Prices of Boxboards In East — Cotton Rag Markets Active — The Waste Paper Supply Tighter In Strong Market.

Office of the PAPER TRADE JOURNAL,
Wednesday, February 6, 1946.

With demand for major grades of paper substantially above output, a relatively short supply situation is indicated for the first half of this year. Current production at 94.5%, indicates the ability of the industry to maintain high output under present difficult conditions.

OPA in Amendment 25 to Revised Price Schedule 32, Paperboard sold east of the Rocky Mountains, effective **February 1, 1946, increases** manufacturers' ceiling prices on 30 grades of paperboard from $2 to $4 a ton. The agency stated the increases are granted to restore normal over-all industry earnings to the 1936-39 level and are thus mandatory under the Price Control Act. Most of the grades affected are boxboards.

Amendment 1 to Maximum Price Regulation 480 —Specialty paper bags and envelopes, effective February 5, 1946, provides that, manufacturers unable to maintain their production of these items because of existing ceiling prices, may apply for individual adjustments of their present ceilings. Adjustments, the OPA stated, will be considered where loss of the manufacturers production will force customers to resort to higher priced or inadequate sources of supply.

The index of general business activity for the week ended January 26 declined to 114.2, from 129.4 in the previous week, compared with 146.5 for the corresponding week in 1945. The index of paperboard production was 145.0, compared with 145.3 in the previous week, and with 154.1 for the corresponding week in 1945.

Paper production for the week ended January 26 was estimated at 94.5%, compared with 88.4% for 1945, with 89.2% for 1944, with 87.1% for 1943, and with 104.3% for the corresponding week in 1942.

Paperboard production for the week ended January 26 was 93.0%, compared with 95.0% for 1945, with 95.0% for 1944, with 88.0% for 1943, and with 101.0% for the corresponding week in 1942.

Wood Pulp

Although it now appears that a new pricing formula may be forthcoming to meet the Administration's sponsored wage increases in many major industries, the OPA has rejected three requests for price relief in domestic and imported wood pulp, stating that such increases were neither necessary nor desirable.

In rejecting the appeal of American importers the OPA stated that price relief could not be justified, either under mandatory provisions of the price act, or the "discretionary" clause which permits increases which the agency believes desirable. The OPA also rejected a request for a 10% increase by domestic producers for three grades of wood pulp on the same grounds. A third rejected request concerned removal of ceilings on export prices for domestic wood pulp.

Finland's production of chemical wood pulp, the Department of Commerce reports, increased from 110,000 tons in the first quarter of 1945 to 116,000 tons in the second quarter. Paper production increased from 52,000 to 58,000 tons. Finland's paper industry is now estimated to be about 40% of the 1939 level.

Rags

Mill buying of new cotton cuttings continues active. Prices are strong at ceiling levels.

Demand for old cotton rags is active at this date. Roofing grades are in heavy demand. Prices are firm in a strong market.

The paper industry consumed 415,804 tons of rags in 1945, the Department of Commerce reports, compared with 427,837 tons in 1944, and with 425,910 tons in 1943. No breakdown of grades is available.

Old Rope and Bagging

The paper industry consumed 7,201 tons of old Manila and other rope in 1945, compared with 9,103 tons in 1944, and with 12,921 tons in 1943.

Current reports reflect an improved demand for scrap bagging this week. Reports also indicate that supplies continue limited. Prices are quite firm at this date.

Old Waste Paper

Mill demand for paper stock continues active and the supply situation is a little tighter at this date. Prices are firm at ceiling levels.

Paper and paperboard mills consumed 6,801,080 tons of waste paper in 1945, the Department of Commerce reports, compared with 6,859,332 tons in 1944, and with 6,367,854 tons in 1943.

Tiffany Joins Newton Paper

HOLYOKE, Mass., January 28, 1946—James B. Tiffany has been named acting chief engineer of the Newton Paper Company. Mr. Tiffany, who since his discharge from the Navy in November has been employed by the state as a boiler inspector, will take over temporarily the position held by Herman Fischer, veteran chief engineer at Newton, who has been ill.

Tiffany before the war was chief engineer at the American Writing Paper Corp. He graduated from Holyoke High in 1918, went to Springfield College and Rensselaer Polytechnic Institute. From 1930 to 1942, when he entered the service, he was chief engineer for the AWP. He was discharged from the Navy as chief warrant officer.

James N. Logan, treasurer and general manager of the Newton Paper Company, said today that Mr. Tiffany will remain on the engineering staff at the paper company upon the return of Mr. Fischer.

Brown Returns to Pittsburgh

PITTSBURGH, Pa., February 4, 1946—Lieut. Colonel Neill S. Brown, Jr., who has been for the past five years connected with the United States Army, has returned to his desk at the General Paper and Cordage Company as sales manager; effective February 1.

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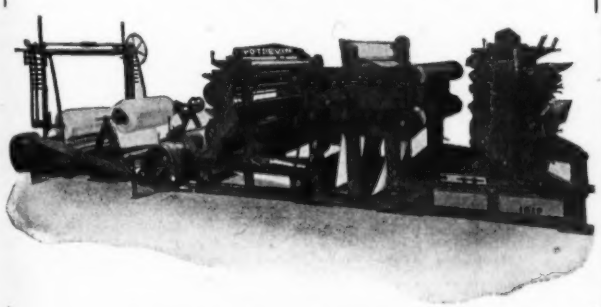

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, February 6, 1946.

BLANC FIXE—The market for blanc fixe is reported steady for the week. Current demand continues fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER—Demand is currently reported active. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point. Imported, 24 cents per pound.

CAUSTIC SODA—Supply situation continues short. No material improvement reported this week. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices are in car lots, in drums, f.o.b. works.

CHINA CLAY—Demand for most grades of china clay is reported good this week. Supply situation is tight. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE — Demand heavy. Production good. Shortage of tank cars and cylinders slows delivery. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f. o. b. works.

ROSIN—No offering or sales. OPA prices: "G" gum rosin at $6.74 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $6.70 per 100 pounds in barrels, New York. Average price of 70% gum rosin size is currently offered at $6.95 per 100 pounds, f.o.b. works.

SALT CAKE—Demand reported good. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $15 per ton; chrome cake at $16 per ton.

SODA ASH—Market demand for soda ash continue heavy. Bulk shipments fairly prompt. Bagged lots slow for lack of labor. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90 in paper bags, $1.05; and in barrels, $1.35.

STARCH—Market supply of cash corn lower this week at 1,401,000 bushels and under last year. Shipments lower. Corn prices are steady. Starch quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f.o.b. Chicago.

SULPHATE OF ALUMINA—Supply situation still reported short. Quotations are unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.75 per 100 pounds. All prices in car lots, in bags, f.o.b. works.

SULPHUR—Demand is reported active for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. The current contract prices at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported fair this week. Quotations unchanged. Domestic grades are quoted at from $16 to $21 per ton, at mines. Canadian $24 per ton. All prices in car lots.

Harold F. Wakefield, research chemist for the Bakelite Company, has been transferred from Bloomfield, N. J., to 30 East 42nd St., New York 17, N. Y.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$67.00	@	—
Sheets	75.00	@	—
*OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
*OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.06	"	6.25
Boards, per ton—			
News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Ll. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

*OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @	$47.25
100% Rag	32.20 "	37.75	33.35 "	39.25
85% Rag	.. "	....	29.90 "	35.00
75% Rag	23.00 "	27.00	24.15 "	28.25
65% Rag	.... "	....	22.80 "	27.75
50% Rag	18.70 "	22.75	19.90 "	24.25
25% Rag	16.40 "	20.00	17.55 "	21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$10.55 @	$12.75	$11.70 @	$14.25
No. 2	9.65 "	11.75	9.80 "	13.25
No. 3	9.20 "	11.25	10.35 "	12.50
No. 4	8.90 "	10.75	10.05 "	12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65 @	$13.90	
No. 2 Glossy Coated	12.40 "	14.00	
No. 3 Glossy Coated	11.60 "	13.90	
No. 4 Glossy Coated	11.15 "	13.70	
No. 1 Antique (watermarked)	10.25 "	11.70	
No. 2 Offset	9.60 "	11.00	
A Grade E. F.	9.35 "	10.70	
A Grade S. & S. C.	9.60 "	11.00	
B Grade E. F.	8.85 "	10.20	
B Grade S. C.	9.10 "	10.50	
C Grade E. F.	8.55 "	9.70	
C Grade S. C.	8.80 "	10.00	
D Grade E. F.	8.25 "	9.50	
D Grade S. & S. C.	8.50 "	9.70	

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	76.00
Unbl. Soda	73.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Weight Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	13.50

Applying to Producers of Dry Weight Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	6.75	"	5.75*
New Unbleached	—	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

*OPA Maximum Prices

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Sometimes small things make lots of trouble. Could your machinery be changed a little to save a lot of work? Write and tell us what we can do to help. Or a *Union* representative will be glad to call.

UNION MACHINE COMPANY
FITCHBURG, MASS.
(Associated with Union Screen Plate Company)

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH BOOK
SUPERCALENDERED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers, Machine Coated

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
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Murco IMPROVED FLAT SCREEN

ALL PARTS IN CONTACT WITH PAPER STOCK *are* STAINLESS STEEL

Illustrating flow box side Patent applied for

VAT BOX
MAY BE USED FOR RAPID CHANGE OF SCREEN PLATES AND WASHING OUT....

For use on either Fourdrinier or Cylinder machines this new improved screen is particularly adaptable for running different colors and grades of paper and boards—any operation where cleaning and preparing the screen for the next run demands no loss of time. Some of its special features are the Patented diaphragm stabilizer, tilt feature of Vat that saves labor and assures thorough cleaning of the entire screen, low maintenance of drive, efficient and quiet operation of screen in its entirety, high production and low HP requirements. It is made of non-corrosive material at all places where metal is in direct contact with stock that has acid conditions.

Send for complete details now.

MURCO

D. J. MURRAY MANUFACTURING CO. WAUSAU, WISCONSIN

Old Rags

White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Thirds and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.30	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

Pre-War Quotations
All Prices Nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	3.25	"	3.25
No. 1 White Cottons	4.25	"	4.75
No. 2 White Cottons	3.25	"	3.75
No. 3 White Cottons	2.50	"	3.00
No. 4 White Cottons	1.90	"	2.20
Extra Light Prints	2.00	"	2.00
Med. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.50	"	2.00
Dark Cottons	1.50	"	1.60
Old Shapporios	1.30	"	1.45
New Shapporios	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.25	@	3.30
Wool Tares, light	3.25	"	3.56
Wool Tares, heavy	3.50	"	3.75
Bright Bagging	3.25	"	3.50
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.30	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

* OPA Maximum Prices.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.89½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.20	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Jave	.16	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¼
Light Silesias	.05¼
Black Silesias, soft	.03¼
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable Shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¾
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.50
No. 1 Clean bright—			
Sisal Strings	.04	"	—
No. 2 Clean bright—			
Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.88	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.89½	"	—
Mill Wrappers	1.10	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	* —	"	4.00
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South American	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.00
New Zealand Wool Pouches	—	"	3.00
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Prices.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04½
Fancy Percales	.04½	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05¾	"	.06
Canton Flannels, Bleached	.06	"	.06¾
Underwear Cutters, Bleached	.06¾	"	.06¾
Underwear Cutters, Unbleached	.06¾	"	.06
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06¾	"	.06¾
Blue Cheviots	.05¾	"	.06
Fancy	.03¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.03¾	"	.04
O. D. Khaki	.03¾	"	.04½
Corduroy	.03¾	"	.04½
New Canvas	.06¾	"	.07
B. V. D. Cuttings	.06¾	"	.07½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.30
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.30	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—